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FEB 2 1925

CONTENTS AND SUBJECT INDEX

Essential Characteristics of a Malignant Cell. Alexis Carrel, M.D., New York 157

Effect of Histamin on Gastric Secretion. Herbert V. Dobson, M.B. (Tor.), Rochester, Minn.....158

Diaphragmatic Hernia of Fundus of Stomach Through Esophageal Hiatus. L. B. Morrison, M.D., Boston.....161
Discussed by Drs. Portis and Silverman.

Multiple Neuritis with Jaundice After Use of Neo-Arsphenamin. Jay Frank Schamberg, M.D., and Sigmund S. Greenbaum, M.D., Philadelphia...163

Human Milk: Its Commercial Production and Distribution. B. Raymond Hoobler, M.D., Detroit.....165

Dermatitis from Dichloramin-M (Methyl-Diphenylmethyldichloramin). James B. McNair, A.M., and Andrew M. Neff, S.M., Chicago.....166

A Physical Problem in Bilateral Hydrothorax, with a New Method of Management. Harry D. Piercy, M.D., Cleveland 167

Motility of the Stomach After Local Resection for Gastric Ulcer. W. Howard Barber, M.D., New York.170
Discussed by Drs. LeWald and Barber.

Syphilitic Spondylitis. Robert B. Cofield, M.D., and Carl F. Little, M.D., Cincinnati.....174
Discussed by Drs. Berkheiser, O'Reilly, Zwick, West and Billington.

Treatment of Nasal Deformities. V. H. Kazanjian, M.D., Boston.....177

Repair of Acquired Defects of Face. R. H. Ivy, M.D., Philadelphia....181

Nasal Deformities Associated with Congenital Cleft of the Lip. V. P. Blair, M.D., St. Louis.....185

Injuries to Nerves from Surgical Treatment of Diseases of the Face and Neck. W. Wayne Babcock, M.D., Philadelphia 187
Papers of Drs. Kazanjian, Ivy, Blair and Babcock discussed by Drs. Beck, Percy, Coughlin, Ritchie, Brophy, Brown, Moorehead, Kazanjian, Ivy and Schaeffer.

Duration of Infectivity of Gonorrhea in the Male. John F. Hogan, M.D., Baltimore 194

Schick Tests and Toxin-Antitoxin Immunization. T. T. Crooks, M.D., Chicago 196

Aneurysm of Splenic Artery. Benjamin F. Davis, M.D., Duluth, Minn.....200

Respiratory Paralysis in Anesthesia. A. H. Miller, M.D., Providence...201

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

An Hematocrit Method. C. M. Van Allen, M.D., New York.....202

Glycerin Capsule for Polygraph. M. H. Kahn, M.D., New York.....203

EDITORIALS

The Physiology of Massage.....204

Features of Muscular Atrophy.....205

Index of Intestinal Putrefaction.....206

CURRENT COMMENT

Annual Dues Now Payable.....207

The Eyes of Youth.....207

Anthrax 207

(Subject Index on next page)

ASSOCIATION NEWS 208

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S

Bulletin

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This American edition is two years newer than the latest French edition because Dr. Vaquez revised and in a great measure rewrote his book in order to make the American edition present today's knowledge of cardiology. To radioscopy of the heart he added his latest findings, made in conjunction with Bordet, and the new table of the diameters of the separate auricles and ventricles. He has rewritten a large part of the chapters on heart failure, treatment, hypertension, and complete arhythmia. He has rewritten the entire chapter on bradycardia and added a chapter on coronary thrombosis. The chapters on endocarditis, pericarditis, myocarditis and congenital lesions he has enlarged, summarizing all the recent work on gallop rhythm and the radioscopic studies of the effects of exertion on the heart.

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See Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "T," Therapeutics; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics.

A. M. A. dues now payable....E-207
Atlantic City Session....208
Scientific Exhibit....208
Acid, hydrocyanic, liver atrophy from....ab-241
Acidosis and narcosis....ab-240
Alcohol, effect on aged....ab-231
Amebiasis, urinary....ab-233
Anemia, bone marrow and spleen in....ab-230
Anesthesia, intraspinal, and azotemia....ab-235
intradural, in genito-urinary surgery...ab-231
regional, for urologic surgery....ab-231
respiration in....*201
Aneurysm of splenic artery....*200
Angina pectoris and encephalitis....ab-235
surgery for....215
sympathetic ganglions in....ab-237
Anthrax....E-207
anthrax septicemia....ab-236
Aortic compression, intestinal injury from....ab-240
insufficiency, functional....ab-237
Aortitis, syphilitic, with anemia....ab-235
Aphasia, complete....ab-228
Appendectomy with gynecologic laparotomy....ab-236
Arrhythmia; extrasystoles....ab-228
Arsphenamin dermatitis....C-221
Association News....208
Asthma, cardiac....ab-241
pathogenesis of....ab-241
Atrophy, muscular....E-205
Bacteria, sedimentation vs. filtration....ab-236
Bacteriophagy in filtered cultures....ab-236
Beriberi; kinetics of starvation....ab-230
Birth rate, declining....215
decline of, in Berlin....216
Blind, books in Braille for....213
Blood cells, pathologic changes in....ab-242
cholesterol in malignant disease....ab-232
clotting and calcium....ab-240
effect of radium on....ab-230
pressure, high, and kidneys....ab-239
pressure, high, from clinical standpoint..ab-241
sugar after removal of salivary glands..ab-236
sugar and farinaceous food....ab-242
sugar, micromethod for....ab-242
sugar, threshold for....ab-242
transfusing pure blood....ab-234
urea, and intraspinal anesthesia....ab-235
Bone grafting in osteosarcoma....ab-235
Mobility causes, rachitic lesion of....ab-233
Book Notices....225
Books Received....Adv. page 28
Brain, ventricular hemorrhage of....ab-229
Caffein, effect on aged....ab-231
Calcium and blood clotting....ab-240
Cancer cells, characteristics of....*157
blood cholesterol in....ab-232
leukocyte reaction in....ab-236
mortality statistics, Vienna....218
Cauda equina, disease of....ab-241
Cell functions and nutrition....ab-239
Chickenpox, etiology of....ab-237
Childbirth: amazing new discovery....215
Choked disk....ab-239
Cholera, oral vaccination against....ab-236
toxin, effect on kidney....ab-233
Chutro, Professor, lectures by....216
Cisterna puncture, history of....ab-239
Coitus in children....ab-238
Contracture, Volkmann's ischemic....ab-235
Correspondence....221
Deaths....219
Deformity correction after bone softening..ab-240
Dermatitis from dichloramin-M....*166
Diabetes mellitus, toasted products in....ab-239
Diaphragm function test....ab-240
Diarrhea, inflammatory....223
Diathesis, exudative....ab-241
Dichloramin-M, dermatitis from....*166
Diphtheria, Schick tests....*196
toxin-antitoxin immunization....*196
Dyspepsia, fermentation....ab-242
nervous....ab-240
Edema, angioneurotic....ab-237
angioneurotic, of glottis....ab-242
Embolectomy....ab-236
Empyema treated by closed method....ab-229
Encephalitis, epidemic, blood in....ab-239
angina pectoris and....ab-235
chronic, with total brain involvement..ab-233
Enteroptosis, anatomy of....ab-237
Epinephrin glycosuria....ab-238
Erythrocytes, sedimentation....ab-239
Eye, intra-ocular tension....ab-236
eyes of youth....E-207
Face, hypertrophy of, from syphilis....ab-237
plastic surgery....*181
surgery, nerve injuries from....*187
Foot and mouth disease, rats as carriers of....ab-233
Foreign Letters....214
Furuncles, treatment....ab-239, ab-240
Gallbladder, calculi, early operation for..ab-238
inflammation, causes thyroid disease..ab-234
Gastro-enteritis, Breslau, and paratyphoid B....ab-237
Genito-urinary tract, surgery, intradural anesthesia in....ab-231
Glycosuria, renal, threshold for....ab-242
epinephrin glycosuria....ab-238
Goiter, exophthalmic, serum of dethyroidized animals in....ab-235
Gonorrhea, infectivity of....*194
Haff disease, cause of....216
Hare-lip, nasal deformities with....*185
Heart, dextrocardia....ab-241
action of tartar emetic on....ab-229
electrocardiography....ab-242
senile heart....ab-231
size, diastolic, and pulse rate....ab-228
Hematocrit method....*202
Hernia, diaphragmatic....*161
fat, in orbit....ab-235
plaintiff's election between truss and herniotomy....Ml-226
Hip joint, congenital dislocation....ab-242
Histamin, effect on gastric secretion....*158
Hospitals, patients, admission discretionary (N. Y.)....Ml-226
staff, dismissal discretionary (N. Y.)..Ml-226
Hunter, John Irvine....214
Hydrothorax, bilateral....*167
Idiocy, amaurotic family....ab-229
Immunity to antiplatelet serum....ab-232
Industrial disease of the skin....217
Infant mortality in Dairen....ab-233
Instruments, hematocrit method....*202
Insulin, action on pancreatic secretion....ab-239
absorption from alimentary canal....ab-227
anhydremia from....ab-227
in xanthoma....ab-235
shock or hypoglycemic reaction....ab-228
Intestines, injury from aortic compression....ab-240
new index of putrefaction in....E-206
Intracranial pressure, increased....ab-232
Intussusception, unusual case of....ab-229
Jaundice from neo-arsphenamin....*163
Kottmann reaction in psychiatric cases....ab-228
Labor, Kielland forceps....ab-239
Lead poisoning....C-221
Leishmaniasis in children....ab-237
Lenticular degeneration in aphasia....ab-228
Leukemia, lymphatic, and infection....ab-241
Leukocyte reaction in cancer....ab-236
simplified Arneth count....ab-230
Liver, atrophy, from hydrocyanic acid....ab-241
Lung disease from yeast....ab-235
gangrene complicating tuberculosis....ab-235
musculature, hypertrophy of....ab-233
Magnesium, action of....ab-239
Malaria in northern Argentina....ab-239
quinin enemas in....ab-233
Marriages....218
Massage, physiology of....E-204
Measles, experimental....ab-227
Medical Education in Russia....ab-239
and the rural physician....C-222
Medical Education, Registration....224
Medical-Surgical Academy, trouble in....216
Medicolegal....226
Meetings, Coming Meetings....226
Meningitis from Micrococcus melitensis..ab-235
Menthol bearing plants....213
Mercurochrome, action on vas deferens....ab-231
in septicemia....224
Mercury, flooding pulmonary circulation with....ab-238
Milk, human; its commercial production....*165
bactericidal property of....ab-232
Neck, fracture-dislocation of....ab-229
Neo-arsphenamin, neuritis with jaundice after....*163
Nephritis, oxalate, urea retention in....ab-233
Nephrosis, urea treatment in....ab-239
Nerve, vagus, in chronaxia....ab-236
injuries from facial surgery....*187
Neuritis, multiple, from neo-arsphenamin..*163
New and Nonofficial Remedies....203
News....208
Nose deformities, treatment....*177
deformities with hare-lip....*185
Nutrition and cell functions....ab-239
Obesity, juvenile, organotherapy in....ab-234
Orbit, fat hernia in....ab-235
Osteosarcoma, etiology....ab-236
Oxydases in leukocytes....ab-242
Oysters and typhoid fever....213
Pancreatitis, hemorrhagic....ab-235
Paralysis, general, malarial treatment of..ab-228
Paratyphoid B and gastro-enteritis....ab-237
Peptic ulcer, infection in....ab-235
surgery, gastric motility after....*170
Phlorhizin, blood changes produced by....ab-227
Physician removed from Medical Register..215
rural, and medical education....C-222
Pituitary and female sex organs....ab-238
Pleurisy, diagnosis of....ab-238
Pneumonia, senile, treatment of....ab-231
Polycythemia, splenectomy in....ab-237
Polygraph, glycerin capsule for....*203
Portal circulation, obstruction....ab-242
Pregnancy, fibroids in....ab-239
complications, lectures on....215
Prizes awarded by the French Académie de Médecine....214
Propaganda for Reform....220
Protein Therapy in indigestion....ab-238
of rectal ulcers....ab-238
Purpura, effect of splenectomy on....ab-234
Pyocyanin....ab-238
Queries and Minor Notes....223
Rabies, long latency of....ab-236
Rachitis, bone lesions in....ab-233
Radium, effect on blood....ab-230
Radius, tumor, bone grafting in....ab-235
Rectum, ulcers, protein therapy of....ab-238
Respiration, movements of lung border with....ab-240
Saccharomyces granulomatosus causes lung disease....ab-235
Salivary glands, removal, hyperglycemia from....ab-236
Sarcoma, characteristics of....*157
Sea sickness, treatment of....ab-232
Seminal tract, tuberculosis....ab-231
Septicemia, mercurochrome in....224
Serum sickness....ab-235
Silver compounds, antiseptic efficiency of, lessened....ab-230
Skin disease, occupational....217
Smallpox, intradermal vaccination for....223
Society Proceedings....226
Spine, syphilitic....*174
Splenectomy, effect on purpura....ab-234
effect on splenomegaly....ab-234
Starvation, kinetics of....ab-230
State Board Examinations....224
Stomach secretion and histamin....*158
motility after gastric ulcer surgery....*170
Surgery, plastic....*177, *181
Syphilis, facial hypertrophy from....ab-237
Tachycardia....ab-239
Tamponade, uterovaginal....ab-240
Tartar emetic, action on heart....ab-229
Teeth, apical abscesses, drainage of....C-221
Thirst, histologic changes in....ab-236
Thrombo-angiitis obliterans....ab-232
Thrombosis after vascular surgery....ab-240
Thymic constitution....ab-239
Thyroid disease from cholecystitis....ab-234
Tonics and Sedatives....Adv. page 22
Trauma, plaintiff's election between palliative and radical treatment (hernia)....Ml-226
Tuberculosis, apical percussion in....ab-240
complement fixation test in....ab-233
in London, expenditure on....214
in Scandinavians....223
infectious....ab-237
miliary, gangrene complicating....ab-235
mortality statistics in Vienna....218
primary tuberculous infection in adult..ab-235
Typhoid, cultures and lysis in....ab-236
oysters and....213
Ultraviolet rays and leukocyte oxydases..ab-242
Uncinaria, carbon tetrachlorid effect on...ab-227
Uncinariasis, carbon tetrachlorid and chenopodium oil in....ab-227
Urea treatment in nephrosis....ab-239
retention in oxalate nephritis....ab-233
Urinary tract, surgery, regional anesthesia for....ab-231
Uterus, cancer, and constitution....ab-239
Vaccination, oral, against cholera....ab-236
intradermal vaccination....223
peritoneal, and chemotherapy....ab-237
Vas deferens, antiperistalsis....ab-240
action of mercurochrome on....ab-231
Vision of youth....E-207
Vitamin A deficiency lowers resistance to infection....ab-232
C production by germination....C-222
Xanthoma, insulin in....ab-235

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ESSENTIAL CHARACTERISTICS OF A MALIGNANT CELL*

ALEXIS CARREL, M.D.
NEW YORK

The best method of ascertaining the properties that characterize a malignant tissue would be to transform in vitro a strain of cells of a known type into cells capable of producing sarcoma or carcinoma, and to study the changes undergone by the strain. The comparison of the normal and the malignant strains would show what characteristics are specific of the state of malignancy. As we possess pure cultures of normal cells of several types, and as the contaminating agent of Rous sarcoma renders feasible the transformation in vivo of a normal cell into a malignant one, an attempt could be made to change in vitro normal cells into sarcoma cells.

The first experiments consisted in determining the nature of the cells that are susceptible to the agent of Rous sarcoma. It was obvious that the strain selected for the attempt at contamination must be of the same type as the tumor cell. Although Rous sarcoma is composed of fusiform cells, it was not certain that fibroblasts are the malignant element of the tumor, because they are not its only constituents. When a fragment of spindle-cell fowl, mouse or human sarcoma is cultivated in vitro, it gives rise, as is well known, to several kinds of cells, such as polymorphonuclear leukocytes, macrophages, and fibroblasts. The malignant characteristics may belong to the macrophages as well as to the spindle-shaped cells which have been called tumor cells by several experimenters. Therefore, it was necessary to ascertain to what type the malignant cell of Rous sarcoma belongs. This was done in the following manner: From Rous sarcoma and another chicken sarcoma, pure strains of fibroblasts and of macrophages were cultivated. The strains of fibroblasts were found not to be malignant, while the pure cultures of macrophages, when grafted into fowls, always gave rise to tumors, which grew rapidly and killed the animal. As Rous sarcoma appeared, therefore, to be a disease of the macrophages, it was probable that tissue and blood macrophages would be susceptible to Rous virus, and that fibroblasts would not.

This supposition was verified experimentally. So far, fibroblasts in pure cultures, contaminated with filtered Rous sarcoma extract, have not become transformed into malignant cells. On the contrary, pure strains of large mononuclear leukocytes treated in the same manner rapidly acquired the characteristics of a culture of macrophages from Rous sarcoma.

The inoculation of normal cells with Rous agent was made in the following way: Cultures of large mononuclear leukocytes (monocytes, macrophages, endothelial leukocytes) were obtained by placing fragments of a film of white blood corpuscles in flasks containing the proper medium. After about two weeks, the coagulum was filled with monocytes, while the lymphocytes and polymorphonuclear leukocytes had disappeared. The solid medium containing the living cells was removed from the flasks and cut into a number of square fragments, which were used for inoculating several other flasks. After a few hours, the monocytes migrated from the fragments into the medium as large ameboid cells with elongated pseudopods, which sometimes united in chains, but generally were isolated from one another. They never built up a tissue or assumed the appearance of fibroblasts, as may happen when other methods of culture are employed. The medium remained homogeneous, and the presence of the cells could not be detected with the naked eye, except when they grew in dense, separate colonies. Digestion of the medium never occurred. Fragments of the monocyte culture injected into chickens gave rise to small tumors, which disappeared within a few days.

Some of the flasks were inoculated with a small amount of filtered extract of Rous sarcoma. As the active principle of Rous sarcoma disappears rapidly when it is kept in serum at body temperature, there was no possibility of the agent remaining active in the medium unless it was propagated and set free by the cells. After about twenty days' incubation, the condition of the cells was tested by inoculation into fowls. The development of a rapidly growing tumor, ultimately killing the animal by metastases, indicated whether the monocytes had become sarcomatous.

The presence of the filtered extract of Rous sarcoma in a culture of monocytes never increased their growth activity. Generally, after one or two days, a few dead cells appeared in the coagulum. This change was not specific and might be very slight. In some experiments the cultures were not modified in their general appearance, and the monocytes migrated and multiplied in the usual manner for weeks. They had the same cultural properties as normal monocytes, without digestion of the medium. They were none the less infected, and gave rise to tumors when transplanted into chickens. As a rule, the tumors produced by inoculation of these apparently normal cultures occurred later and grew less quickly than those determined by the cultures in which marked morphologic changes had taken place. The monocytes that failed to show morphologic change in the infected cultures of monocytes remind one of those macrophages cultivated from

* From the Laboratories of the Rockefeller Institute for Medical Research.

fragments of Rous sarcoma which, although identical in appearance with normal macrophages, gave rise to malignant tumors on inoculation into a fowl. It was interesting to observe that these infected monocytes, as well as macrophages derived directly from Rous sarcoma, could spread and multiply for a long time without showing any evidences of increased or decreased activity.

But in most of the experiments, after three or four days a more specific change took place in the infected cultures of monocytes. The cytoplasm of some monocytes became full of vacuoles and granulations, their shape more or less rounded, and the rate of migration and multiplication decreased. A few cells agglomerated in dark clumps. During the following days, these masses of necrotic tissue became larger and brought about the digestion of the medium. Then the coagulum assumed somewhat the appearance of a geographic map, which is also characteristic of the cultures of Rous sarcoma. At the same time, the cells were profoundly modified. They disappeared progressively from the coagulum. In several cultures, no monocytes remained after twenty or twenty-five days. From the masses of amorphous tissue there migrated large triangular, polygonal and spindle-shaped cells, having sharp processes and filled with granulations. Some cells took on the appearance of normal fibroblasts. While the cells agglomerated in larger amorphous masses, the digestion of the medium became more active. This process led eventually to the destruction of all living elements. The inoculation into chickens of a small amount of the clear supernatant fluid of the cultures brought about the development of highly malignant tumors in a short time.

To summarize: The penetration into large mononuclear leukocytes of the agent of Rous sarcoma gave those cells the property of secreting the Rous agent and of dying prematurely, probably without interfering for some time with their reproductive power. It also rendered them capable of digesting the culture medium and of assuming the appearance of fibroblasts. But these last properties are possibly the consequence of the formation of necrotic tissue by the dead monocyte. The malignant monocyte differs from the normal one chiefly because it is a diseased cell which is short lived. But it is far from being anarchic, or from possessing as much growth energy as an embryonic cell, as is supposed to be the case according to the classical hypotheses.

It appears as a paradox that a tumor endowed with the power of unlimited growth within the organism should be built up by cells that have low resistance and shorter life than normal cells. However, this contradiction is apparent only, and an explanation of the genesis of the Rous sarcoma can be based on the properties of the malignant monocyte.

When the agent discovered by Rous penetrates or develops within a fowl, it is destroyed in a short time by the humors, unless it is taken up by a tissue macrophage or a monocyte. The infected macrophage continues to multiply and infect other macrophages, although it eventually dies. Then the dead macrophages attract normal macrophages, which become modified in their turn. While this process is going on, the growth promoting substances or trephones contained in the macrophages are set free, and bring to the fibroblasts and other cells of the neighboring tissues the food material and stimulus necessary for multiplication. Since the Rous agent propagates itself within the cells, this process can go on indefinitely, and hence the tumor grows without limit in size.

This explanation of the mechanism of the growth of a sarcoma may or may not prove to be strictly true. However this may be, the fact will remain that the differences between a normal and a malignant cell can be accurately analyzed by the method here described, and that the tumor cell described in the preceding experiments is a diseased monocyte which propagates the Rous agent, slowly degenerates, and ultimately dies. It also appears that, in the growth of Rous sarcoma, the macrophages possess a function quite opposed to their classical rôle of defenders of the organism against bacteria and foreign substances. They protect the active agent of the Rous sarcoma against destruction by the humors, and supply the conditions necessary to its propagation.

EFFECT OF HISTAMIN ON GASTRIC SECRETION

WITH ESPECIAL REFERENCE TO ACHLORHYDRIA: PRELIMINARY REPORT *

HERBERT V. DOBSON, M.B. (TOR.)
Fellow in Medicine, the Mayo Foundation
ROCHESTER, MINN.

Histamin has a markedly stimulating effect on gastric secretion. This action of the drug on cats and dogs was observed by Popielski,[1] Keeton, Koch and Luckhardt,[2] Lim,[3] Rothlin and Gundlach,[4] and Ivy, McIlvain and Javois,[5] and the same observation was made on the stomach of man by Carnot, Koskowski and Libert,[6] and by Matheson and Ammon.[7]

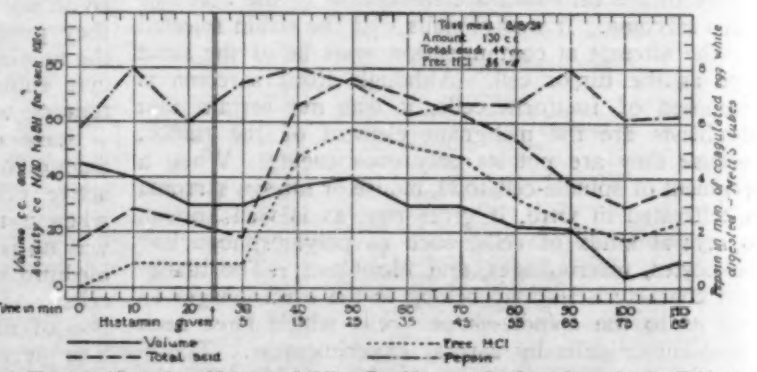

Chart 1 (Case 1, subject, aged 26).—Graphic reproduction of results in Table 1; this case is representative of Group A. The meaning of the various kinds of curves is the same in Charts 1, 2, 3 and 4.

---

* Work done in the Section on Clinical Investigation, the Mayo Foundation.

1. Popielski, L.: Beta-imidazolyläthylamin und die Organextrakte, I, Beta-imidazolyläthylamin als machtiger Erreger der Magendrüsen, Arch. f. d. ges. Physiol. **178**: 214, 1920; II, Einfluss der Säuren auf die Magensaftsekretion erregende Wirkung der Organextrakte, ibid. **178**: 237, 1920.
2. Keeton, R. W.; Koch, F. C., and Luckhardt, A. B.: The Response of the Stomach Mucosa of Various Animals to Gastrin Bodies, Am. J. Physiol. **51**: 454-468 (April) 1920.
3. Lim, R. K. S.: The Question of a Gastric Hormone, Quart. J. Exper. Physiol. **13**: 79, 1922-1923.
4. Rothlin and Gundlach, quoted by Lim (Footnote 3).
5. Ivy, A. C.; McIlvain, G. B., and Javois, A. J.: The Stimulation of Gastric Secretion by Histamine, Science **58**: 286, 1923.
6. Carnot, P.; Koskowski, W., and Libert, E.: L'influence de l'histamine sur la sécrétion des sucs digestifs chez l'homme, Compt. rend. Soc. de biol. **86**: 575, 1922.
7. Matheson, A. R., and Ammon, S. E.: Observations on the Effect of Histamine on the Human Gastric Secretion, Lancet **1**: 482-483 (March 10) 1923.

By subcutaneous injection of the drug and periodic aspiration of the gastric contents, Matheson and Ammon found that there was an increased flow of gastric juice accompanied by an increase of free hydrochloric acid, total acidity and peptic activity.

In this study, the effect of histamin on gastric secretion was observed in seventeen subjects, of whom six were normal. The remaining eleven had presented

Group C, subjects with intermediate achlorhydria; no free acid in repeated fractional test meals, but a definite response after the administration of histamin.

Group D, subjects with persistent or complete achlorhydria; no tendency to free acid secretion after repeated fractional test meals, or after the administration of histamin.

In the accompanying tables and charts, the typical results for each group are given.

TABLE 1.—*Protocol of Results from a Normal Adult Male (Case 1, Group A, Subject Aged 26)**

			Titration					Local Reaction		Blood Pressure			Vasodilatation (Facial Flush)	Test Meal				
Time, a.m.	Aspiration	Volume, C.c.	Total Acid	Free Hydrochloric Acid	Pepsin, Mm. (Mett)	Mucus	Bile	Wheal	Erythema	Systolic	Diastolic	Pulse Rate		Date	Volume, C.c.	Total Acid	Free Hydrochlorid Acid	Comment
8:35	..	..	..	..	....	...	...	...	...	120	80	60	...	8/8	130	42	26	
8:45	1	45	16	0	5.75	2	0	...	...	118	78	60	...	...	...	..	..	Tube passed; slight retching
8:55	2	40	28	8	8.0	2	0	...	...	116	78	60	...	...	...	..	..	
9:07	3	30	24	8	6.0	1+	0	...	...	112	66	60	...	...	...	..	..	
9:12	0.5 mg. of histamin intramuscularly																	
9:15	..	..	..	..	....	...	...	...	...	100	60	72	4	...	...	..	..	Throbbing of head
9:17	4	30	18	8	7.5	1+	0	1+	2+	112	65	84	4	...	...	..	..	
9:27	5	36	66	48	8.0	1	0	2	3	110	60	68	4	...	...	..	..	Slight headache
9:37	6	40	76	58	7.5	1	0	1+	2+	108	64	60	3+	...	...	..	..	Slight headache
9:47	7	30	70	52	6.25	1	0	1	2	105	65	60	2+	...	...	..	..	
9:56	8	30	64	48	6.75	1	0	0	1	108	75	58	1+	...	...	..	..	
10:10	9	22	54	32	6.75	1+	0	0	1	108	72	60	1	...	...	..	..	
10:20	10	22	38	24	8.5	1+	1+	0	0	...	..	..	1	...	...	..	..	
10:30	11	4	30	17	6.25	1+	1	...	...	...	..	..	1	...	...	..	..	
10:40	12	10	36	24	6.25	1+	1	...	...	...	..	..	1—	...	...	..	..	Psychic stimulation

* The presence of mucus and bile, the local reaction, and vasodilatation are graded on the basis of 1 to 4.

achlorhydria in a single fractional test meal (arrowroot crackers, 40 gm., and water, 400 c.c.), with aspirations at fifteen-minute intervals during the second hour of digestion. Second, and sometimes third, test breakfasts, identical with the first, were given. On a subsequent day, breakfast was withheld, and the procedure commenced early in the morning. A Rehfuss tube was passed, and the entire gastric contents were withdrawn. Complete aspirations were made thereafter at ten-minute intervals, twelve or fourteen times. Total emptying of the stomach was thought to be assured by manipulating the tube and by having the patient change his position several times during each aspiration. After the third aspiration, 0.5 mg. of histamin base (special preparation) was given intramuscularly. Immediately after the injection, such effects as vasodilatation, change in blood pressure, change in pulse rate, and local reaction at the site of injection were observed and recorded. The volume, total acidity, free acidity and peptic activity were determined for each aspirated specimen, the acidity being expressed in cubic centimeters of tenth normal sodium hydroxid for each 100 c.c. of gastric juice, and the peptic activity in millimeters of coagulated egg-white digested from Mett's tubes during twenty-four hours' incubation at 37 C. In no instance were any untoward general effects observed, but, because of the fall in blood pressure and the reported constrictive action of the drug on the bronchioles, it should be used with caution in cases in which there are definite cardiac lesions or asthma.

On the basis of free hydrochloric acid production, the cases studied may be classified as follows:

Group A, normal subjects: those in whom acid values in test meals were normal.

Group B, subjects with intermittent achlorhydria; the achlorhydria appearing in one or two fractional test meals, but free acid in repeated test meals.

Table 1 is representative of Group A. It shows the response obtained in a presumably normal subject without symptoms, and with normal acid values after a test meal (Case 1).

The vasomotor effects were used as a measure of the individual reaction to the drug, and may be taken as fairly typical of the whole series. Within three minutes after administration there was a drop of 12 mm. of mercury in the systolic blood pressure, an increase of twelve beats in the pulse rate, and a marked facial flush. During the next two minutes, there was a further increase of twelve beats in the pulse rate and a return of the systolic pressure to the former level. This may be regarded as an average reaction for a dosage of 0.5 mg. In some instances there is no

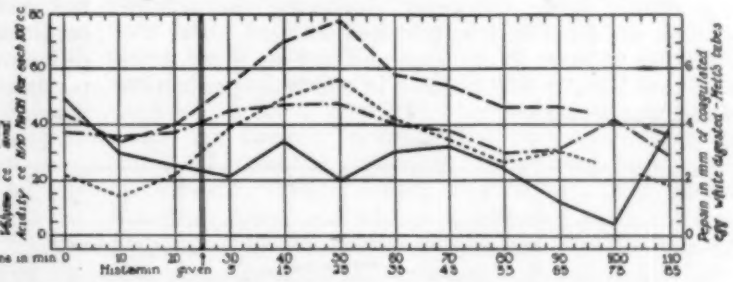

Chart 2 (Case 2, subject, aged 42).—This case is representative of Group B.

fall in blood pressure, and even an increase may be observed, but under such circumstances the pulse rate is usually unduly accelerated.

It may be noted that there is a moderate increase in the volume of secretion after the administration of the drug, the maximal being attained at the twenty-five minute interval, after which there is a progressive decrease. It has been found that the increase in the volume of gastric secretion following histamin is not so striking as the increase in the concentration of acid. The former seems to vary more with psychic effects,

such as the apprehension and discomfort associated with the process of tubing.

At the conclusion of each test, the patient was asked to think intently of his favorite foods during the ten-minute interval, in an effort to secure psychic stimulation. In this case there was slight response in

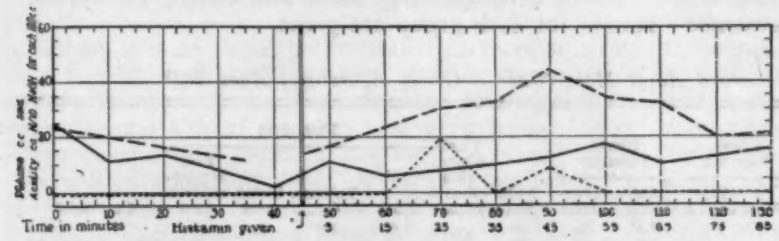

Chart 3 (Case 3, subject, aged 49).—This case is representative of Group C.

volume, total acidity and free acidity. Much greater increases were observed in other cases. The pepsin values fluctuated, with a lack of the uniform increase and decrease characteristic of the acidity, and this holds for many other cases in the series. The results shown in Case 1, Table 1, are illustrated graphically in Chart 1, Group A.

In Case 2 (Chart 2, Group B), following an initial test meal there was no free hydrochloric acid in four fractions; but in a subsequent test meal, adequate values of 44 total acidity and 22 free hydrochloric acid were obtained.

The irregularity observed in the curve for volumes may possibly be related to the fact that the patient had a functional nervous disturbance and was rather apprehensive throughout the test. The increased volume in the final aspiration corresponds with the psychic stimulation. The increase in free and total acidity is shown by the curves (Chart 2). The values for pepsin are adequate throughout, being slightly increased after the administration of the drug.

In Case 3 (Chart 3, Group C), repeated fractional test meals revealed the absence of free hydrochloric acid. However, following the administration of histamin, free acid was secreted. The low aspiration volumes in this case and in Case 4 are noteworthy as being typical of cases in which the production of acid was depressed.

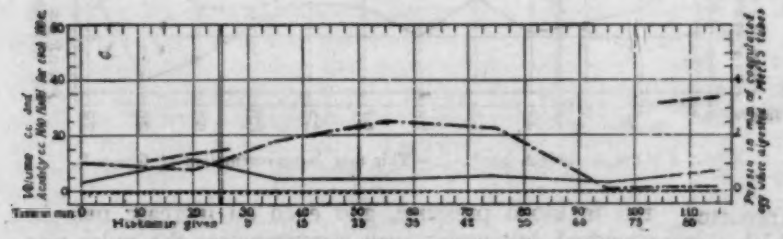

Chart 4 (Case 4, subject, aged 31).—This case is from Group D; the aspiration volumes are so low as to allow of very few total acidity determinations.

In Case 4 (Chart 4, Group D), there was no free hydrochloric acid in repeated test meals or after the administration of histamin. The adequate response in the production of pepsin suggests the value of treatment with acid, since the pepsin is active only in an acid medium. Conclusive statements cannot be made as yet; but it would seem from the cases in this series that the production of pepsin is usually adequate, even in cases of persistent achlorhydria; and true achylia gastrica may be a relatively rare condition.

For simplification in compiling the average results for the series, only three of the twelve or fourteen aspirations made in each experiment are recorded: (1) the fasting content, represented by the primary aspiration made immediately on passing the tube, which consists of any retained overnight secretion and a certain amount due to psychic disturbance associated with the passage of the tube; (2) the "resting" secretion, measured by the average of the next two aspirations preceding the administration of the drug, this being regarded as fairly representative of secretion for a ten-minute interval, since any initial psychic disturbance has largely subsided by then, and (3) the maximal effect after the administration of histamin, which is usually obtained in the aspiration at the twenty-five minute interval.

The average results for the various groups are shown in Table 2. Analysis of these shows that the secretory activity of the stomach, whether measured by the fasting content, "resting" secretion, or the response to histamin, is greatest in the normal subjects included in Group A and decreases progressively through the different groups, being least in Group D, the cases of persistent achlorhydria. This is seen to be true whether the activity is estimated in terms of aspiration volumes, total acidity or free acidity. Particularly striking are the changes in the concentration of free hydrochloric acid after the administration of the drug. This suggests the possibility of a classification of cases of achlorhydria on the basis of a response to histamin. The results tabulated in Table 2 are expressed graphically in Chart 5.

Graphic representation of classified average results.

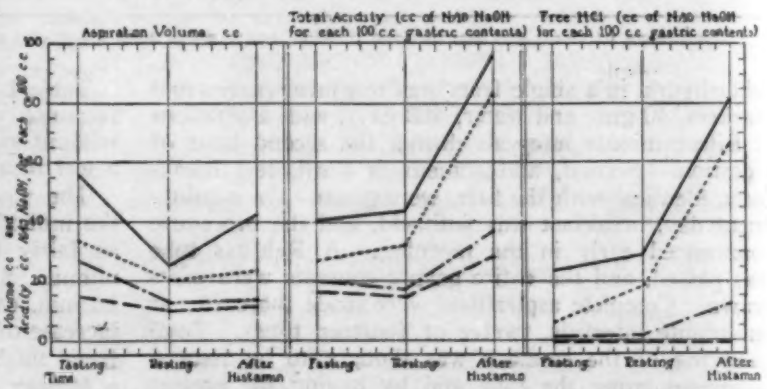

Chart 5.—A composite graphic reproduction of results shown in Table 2; solid line, Group A, normal; short dashes, Group B, intermittent achlorhydria; dashes and dots, Group C, intermediate achlorhydria; long dashes, Group D, persistent achlohydria.

At present, work is being done to establish the average response to the drug in the gastric secretion of normal persons and different groups of patients. The object of this is to provide a more reliable and flexible test than now exists for the investigation of the secretory activity of the stomach. A subsequent paper will contain the results of this work.

CONCLUSIONS

1. Histamin is a strong stimulus to gastric secretion, especially to the secretion of acid.

2. A small series of patients in whom achlorhydria was demonstrated and a control series of normal subjects were studied. In all phases of gastric secretion, the response to the administration of histamin in the patients with achlorhydria was less than that in normal subjects.

TABLE 2.—*Classified Average Results*

Group	Cases	Aspiration Volume, C.c.			Total Acidity			Free Hydrochloric Acid		
		Fasting	Resting	After Histamin	Fasting	Resting	After Histamin	Fasting	Resting	After Histamin
A. Normals	6	56	25	43	41	43	96	23	28	81
B. Intermittent achlorhydrias	3	34	21	23	27	32	84	6	18	66
C. Intermediate achlorhydrias	2	28	13	14	20	17	37	0	0	12
D. Persistent achlorhydrias	6	15	11	13	16	15	29	0	0	0

Fasting: Aspiration of complete gastric content immediately on passage of tube.
Resting: Average of two aspirations at ten-minute intervals after the fasting aspiration.
After histamin: Aspiration at the height of histamin action.

3. Cases of achlorhydria may be grouped according to whether free hydrochloric acid can be obtained (1) in repeated fractional test meals, (2) only after the administration of histamin, or (3) neither in repeated fractional test meals nor after the administration of histamin. The average results for the series show consistently decreasing values in response to histamin for the various groups.

4. The results of a single fractional test meal do not prove the existence of persistent achlorhydria.

5. The results of this study indicate that true achylia gastrica may be a relatively infrequent condition.

DIAPHRAGMATIC HERNIA OF FUNDUS OF STOMACH THROUGH THE ESOPHAGEAL HIATUS *

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Literature is replete with articles on the subject of diaphragmatic hernia, giving minute details as to its embryologic anatomy and differential diagnosis. Richards [1] recently discussed it from the point of view of embryology, and Morrison,[2] from that of the differential diagnosis. I shall refrain from discussing these points. and take up the subject principally from the roentgenologic point of view.

Several years ago, my associate, Dr. T. R. Healy, and I made a careful roentgen-ray study of the fundus of the stomach, hoping to determine some method whereby malignancy could be earlier diagnosed. My attention was attracted to the varying shapes of the fundus in the upright, prone, supine, lateral and oblique positions, when filled with the barium meal. The position of the esophageal opening into the stomach was noted, as well as the position and movements of the diaphragm, the behavior of the heart and lungs, and especially the esophagus in cardiospasm and malignant disease.

Following these observations, I [3] reported twelve cases of congenital hernia of a portion of the fundus of the stomach through the esophageal hiatus. Since then, we have observed thirty other cases, making a total of forty-two cases in about 3,500 gastric cases studied.

In 1921, Truesdale [4] said: "Roentgenologists seldom make the diagnosis when the thoracic symptoms predominate. Transposition of the abdominal viscera to the pleural cavity must be discovered or at least suspected by the internist, who in turn directs the roentgenologist to administer bismuth solution for his examination." This was doubtless true at that time, but, curious to say, there was only one of these forty-two cases of congenital hernia even suspected by the attending physician. Undoubtedly, many cases are still being overlooked by roentgenologists.

Béclère reports only two cases of diaphragmatic hernia out of 5,000 roentgenographic examinations. Griffin [5] reports 650 cases, of which only fifteen cases were correctly diagnosed. Kessler [6] says that the condition is infrequent. MacMillan [7] found only three cases of diaphragmatic hernia in 15,000 patients examined roentgenographically at General Hospital No. 1. Rendich [8] reports that out of 5,033 patients examined at Bellevue Hospital, only two cases of diaphragmatic hernia were found. Seven cases of eventration were recorded. Rowlands [9] reports that, in Guy's Hospital, from 1856 to 1920 only two cases were recorded, both traumatic.

The small hernias are very difficult to demonstrate in a roentgenogram. For the study of these cases, the fluoroscope is the method *par excellence*.

In the cases reported, the patients varied in age from just under 6 to 76 years; in sex, females predominate; in type, a slightly greater percentage in the hypersthenic individual, but many of the hyposthenic type. There was no noticeable difference in the movements of the diaphragm during respiration. Those patients having enlarged hearts, with the high diaphragm and horizontally placed heart, were more subject to dyspnea, especially in the presence of myocardial changes and aortitis.

ROENTGENOGRAPHIC STUDY

The roentgen-ray examination is first made with the patient in the upright position, thus obtaining the anteroposterior and oblique views, and noting the position of the diaphragm and its movements, also the cardiac shadows and the posterior mediastinum. In only four of these cases did I observe a gas bubble above the diaphragm. In three of them it extended out to the left and nearly above the line of the heart shadow. A fluid level was observed in two cases in which the fundus, including the esophageal opening, was fixed above the diaphragm, one of them being postoperative, the other a rather large hernia. In the other two cases, only the fundus was adherent above the diaphragm. The gas bubble may be best seen by looking obliquely through the posterior mediastinum. A barium meal is then given. There is normally a slight sphincter-like effect at the cardia with the respiratory movements; the column of fluids is from 2 to 3 inches high in the lower esophagus when the barium is rather rapidly ingested.

In nearly all the hernia cases, the column of fluid remains from 4 to 5 inches high; the esophagus seems

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Richards, L. G.: Ann. Otol., Rhinol. & Laryngol. **32**: 1145 (Dec.) 1923.
2. Morrison, J. M. W.: Arch. Radiol. & Electroth. **28**: 111 (Sept.) 1923.
3. Morrison, L. B.: Paper read before the New England Roentgen Ray Society, April 7, 1922.
4. Truesdale, P. E.: Diaphragmatic Hernia, J. A. M. A. **77**: 993 (Sept. 24) 1921.
5. Griffin: Ann. Surg. **55**: 388, 1912.
6. Kessler, F. H.: J. Radiol. **4**: 199 (June) 1923.
7. MacMillan, A. S.: Am. J. Roentgenol. **7**: 143 (March) 1920.
8. Rendich: J. Radiol. **5**: 124 (April) 1924.
9. Rowlands, R. P.: Diaphragmatic Hernia, Guy's Hosp. Rep. **71**: 91 (Jan.) 1921.

a trifle enlarged. This delay and dilatation are more with the larger hernias, especially when adherent, with the esophagus above the diaphragm. The filled hernia will often partially block the esophagus. After the barium meal is ingested, an attempt to fill the hernia by pressure is only occasionally successful.

The patient is then placed on the horizontal table, in the supine position, and observations are made. In all the series, the cardio-esophageal opening was patent. This is unusual in the normal stomach. It is seen usually only in cases of malignancy of the fundus or lower esophagus, or in old age, and is probably due to fibrosis or to pyloric obstruction with dilatation of the stomach.

This regurgitation explains why some of these patients cannot sleep on their backs or left sides without acid coming into the mouth, or, on waking in the morning, expectorating a mucus-like fluid, which is evidently regurgitated saliva.

As the fundus fills, with the patient in the supine position, instead of rounding up under the diaphragm away from the esophageal opening, it tends to surround the esophagus high up somewhat posteriorly and to the left, pointing into the esophageal hiatus. This is observed also when the hiatus is large without a hernia, similar to the pouching of the peritoneum through large inguinal rings.

It is necessary to rotate the patient into the left oblique position, and have the patient take full inspiration. This will usually fill the hernia; but occasionally, depending on the position of the diaphragm and stomach, the right supine, oblique or even the prone position give the best results. The Trendelenburg position, or even placing a pillow underneath the hips, is occasionally helpful. Often the hernia cannot be filled on first observation, but fills quite readily the following day. The fundus seems to lift up through the diaphragm somewhat to the left posteriorly, and, as it comes through the hiatus, it partially surrounds the esophagus, filling first the lower part of the posterior mediastinum, then pushing out behind the heart shadow. When the fundus is herniated and filled, it causes pressure and prevents the passage of food down the esophagus. The discomfort from the hernia depends not on its size but on its being adherent or on its blocking of the esophagus.

SYMPTOMS

The most constant symptom was pain or distress just above or anterior to the ensiform cartilage, not epigastric. All except one of these cases were sent in for a gastric study, with the clinical diagnosis of gastric or duodenal ulcer, or gallstones. This one patient had an appendix, and later (1915) a gallbladder removed, no gallstones being found. Previously, there had been two roentgen-ray studies made, but no hernia was found. The symptoms continued, especially pain over the ensiform cartilage; continuous hunger, especially the first thing in the morning; dysphagia, often in the early morning; nausea; night awakenings with abdominal distress, vomiting foamy acid food residue; pain extending to the left shoulder at times, and several attacks of questionable hematemesis. A third roentgen-ray examination revealed no ulcer, but a small hernia of the fundus, and an incompetent cardia with no other definite pathologic condition.

The patients have an irregular, ulcer-like history even with hematemesis; the pain resembles mild attacks of cholecystitis, starting in front and radiating to the back, more often to the left shoulder; the stomach distress is frequently at night; there is a lump under the sternum, and the patient vomits undigested food easily. Another patient, Mrs. C., had the appendix removed and repair of lacerations performed seven years before. Ever since she could remember, she had had a low sternal pain. The minute her head rested on the pillow at night, the symptoms began.

M. F., a boy, aged 6, at birth weighed 8½ pounds (3.9 kg.); he did well at first, weighing 16 pounds (7.3 kg.) at 6 months; he regurgitated badly at times; at 8 months his weight reduced to 7½ pounds (3.4 kg.) and he could not retain food, except barley water. The patient then began to improve, and at 1 year he was 3 pounds (1.4 kg.) underweight; he has continued to be underweight ever since; he eats bread with difficulty; takes fatty food easily, but refuses food with residue, vomits frequently, and has bilious attacks. Roentgen-ray observation revealed delay in the lower esophagus, and adherent herniated fundus with an incompetent cardia. Observation three years later still showed hernia; the boy was undernourished, with a capricious appetite; no other pathologic condition was found. This history of regurgitation, with such easy vomiting, loss of weight and pain, often raises the question of pyloric obstruction. I believe that a careful study of the cardia should be made in babies who regurgitate in cases of supposed pyloric obstruction.

Two elderly patients with enlarged hearts had precordial distress and dyspnea in the presence of the filled hernia. One patient, J. F., a man, aged 76 years, affected with angina pectoris, had an adherent fundus of the stomach above the diaphragm. The ingestion of fried clams so irritated the opening that the sac remained filled for some time. His attacks of precordial pain increased and death followed in about four weeks, undoubtedly being hastened by the hernia.

Three patients of the series had diverticulitis of the colon. Four had gallstones. One had a diverticulum in the posterior wall of the upper esophagus, an adherent hernia of the fundus above the hiatus, and multiple diverticulitis of the colon. Another patient was found with an annular carcinoma of the sigmoid. One patient had ulcer of the duodenum. One had an adherent appendix. No gastric ulcers were found in the series.

The differential diagnosis between the traumatic type of hernia, and hernia through anatomic openings of the diaphragm, eventration of the diaphragm and diverticulum of the lower esophagus, is fairly easy to make in the roentgenologic study; clinically it is difficult.

The treatment of many of these cases is undoubtedly surgical. In many, however, the symptoms were not sufficiently pronounced to require surgical intervention, and medical treatment was advised.

I believe that the roentgenologist can help determine the type of treatment by carefully observing the size of the hernia, the symptoms when the hernial sac is filled, and the amount of dilatation of the esophagus. Also, he can suggest the site of operation—whether above or below the diaphragm—by determining the position of the diaphragm, the width of the angle at the ensiform cartilage, and the extent of ossification seen in the costochondral cartilages. In one of these cases, in which both the hernia and gallstones had been demonstrated, a cholecystectomy was performed by Dr. Hugh Williams of Boston. He was able to demonstrate the hernia, but was unable to close the large hiatus from his abdominal incision, as the opening was 8 inches above the highest point of his incision, as the result of the long, tubular chest of the patient; he brought the stomach down and stitched it to the abdominal wall.

Dr. Daniel Fiske Jones of Boston, who has operated in several of these cases, tells me that he finds a large hiatus that will admit from two to four fingers; its margins are thickened, and the stomach wall shows more or less dense, cicatricial-like thickening over that portion which becomes herniated. This indicates an inflammatory process, and might account for the hematemesis. One case in which Dr. Jones operated twice by the abdominal route has proved a failure.

Dr. J. W. Mixter of Boston has reported several cases to me in which he has operated by the intra-abdominal route, with apparently good results.

From our study, we believe that diaphragmatic hernias are more frequent than has been supposed, and that the examiner should constantly be on the watch for this condition. The clinical picture is often very suggestive. When the diagnosis has been made, the roentgenologist can usually give good advice as to treatment—whether it should be medical or surgical. Furthermore, in every operation for stomach or gallbladder disease, the surgeon should take pains to examine the cardio-esophageal opening for a diaphragmatic hernia.

ABSTRACT OF DISCUSSION

DR. MILTON M. PORTIS, Chicago: A few years ago, I reported one case of diaphragmatic hernia and in reviewing the literature I found that the only cases on record were those reported from the necropsy room. The roentgen ray, however, has revealed that these cases are very common indeed. As the author has pointed out, it is the examination in the prone or supine position that brings out a small hernia. A large hernia of the diaphragm is very evident in ordinary routine examination of the chest, but the frequent small hernia can be demonstrated only with the patient in the horizontal position, even exaggerating this by the Trendelenburg position. The patient should be rotated and turned with repeated observations, until finally there is revealed the small lesion which clinically is of the greatest significance in the explanation of many obscure complaints. As Dr. Morrison says, a great many of these patients have no complaint at all. It is perhaps discovered during routine examination of a bismuth meal. It is interesting, too, that of the organs that are found in the hernia, in by far the largest percentage of cases the herniated organ is the stomach. Dr. Jenkinson, in twenty-six cases, found the stomach in the hernial sac in twenty-two. Trauma plays a very limi' rôle. Probably a large percentage of the cases are of congenital origin, which is very important because we are not apt to search as diligently for a diaphragmatic hernia if we have no history of trauma. The textbooks are misleading in this matter. The symptoms and signs of diaphragmatic hernia are quite definite in the large hernia, and very obscure or entirely absent in the small ones. Roentgen-ray examination makes the diagnosis and the differential diagnosis certain. As far as treatment is concerned, aside from palliative medical measures, there is nothing to do, except to have the patient submit to operation. With the improved technic of chest surgery, the mortality and the surgical results are far better than we hoped for.

DR. DANIEL N. SILVERMAN, New Orleans: In a case of anterior right diaphragmatic hernia, we found the colon alone involved. The colon had ascended into the right side of the chest in front of the liver. This condition was not diagnosed clinically, and I did not suspect it until it was discovered by one of our roentgenologists, Dr. Leon Menville. The symptoms had been of only six months' duration. This type of diaphragmatic hernia is exceedingly rare.

Tuberculosis Mortality in 1923.—The death rate from tuberculosis (all forms), according to reports from seventy-seven cities, was 0.98 per thousand population. For 1922 the reports from seventy-two cities gave a death rate of 1.01 per thousand. —*Pub. Health Rep.* **39**:1668 (July 11) 1924.

MULTIPLE NEURITIS WITH JAUNDICE AFTER THE USE OF NEO-ARSPHENAMIN

REPORT OF CASE *

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AND
SIGMUND S. GREENBAUM, M.D.
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While polyneuritis has occurred not infrequently after the accidental or therapeutic ingestion of inorganic arsenicals, it appears to be a relatively uncommon complication after the employment of the arsphenamins. When it does develop after their use, it appears to be more common after neo-arsphenamin than after arsphenamin. A mild degree of nerve irritation is not rare after the administration of a series of doses of neo-arsphenamin, resulting in the development of numbness and formication in the extremities. The reason that these symptoms appear more frequently after neo-arsphenamin than after arsphenamin in all probability is that the former is a less stable preparation, varies more in the different laboratories in which it is made, and is much more readily subject to oxidation on shaking or exposure to the air. Arsenoxid is more readily formed as a result of this tendency. A further oxidation might lead to a splitting off of the arsenic from the benzene ring. The first reported association of polyneuritis and dermatitis exfoliativa following the arsphenamins, appears to have been published by Duhot.[1] All the five cases observed by Duhot occurred after the use of neo-arsphenamin, whereas he never saw this complication in a series of 9,000 injections of arsphenamin. Cases of polyneuritis have also been reported by Spillman, Bayet, Solomon, Variot, Bouquier and Beeson.

The case here reported by us has several points of unusual interest. The patient developed a jaundice after four injections of neo-arsphenamin in the course of a month. It was believed by us that the jaundice represented a hepatitis which was due to the action of the drug on the spirochetes in the liver and the resulting damage to the surrounding tissues associated with the spirocheticidal influence. We did not in the beginning regard the jaundice as an arsenical jaundice per se. Under careful guidance, the neo-arsphenamin was cautiously continued, the blood being examined for bilirubin every few days. After two further injections of neo-arsphenamin, the patient developed the beginning symptoms of a multiple neuritis. This sequence of events proved that the jaundice was not the result of a hepatic Herxheimer reaction, but was due to the toxic action of the drug. We wish to emphasize the difficulty that is at times experienced in determining the cause of jaundice developing during the course of arsenical treatment. Milian of Paris has insisted that nearly all of the cases of jaundice occurring in early syphilis after the use of a few injections of neo-arsphenamin represent a hepatic Herxheimer reaction, and that the appropriate treatment is the further vigorous use of the drug. Our experience would lead us to the view that every case of jaundice occurring after the use of the organic arsenicals should be studied with the most rigorous care, and that the resumption of the use of these remedies should not be attempted except

* From the Graduate School of Medicine of the University of Pennsylvania, and Research Institute of Cutaneous Medicine.

1. Duhot: Rev. belge d'urol. et de dermato-syph. **1**: 91, 1912.

after conclusive studies demonstrating the cause to be other than the arsenicals themselves.

REPORT OF CASE

History.—W. M., a colored man, aged 34, a steel worker, was referred to our clinic because of a specific iritis, Dec. 12, 1923. He had a generalized eruption in July, 1923, and the Kolmer complement-fixation test, December 12, was strongly positive. He received 0.45 gm. of neo-arsphenamin, December 17, and a similar dose, Jan. 3, 1924 (the irregularity of treatment was due to his failure to return on the days requested). January 10 and January 17, he received a dose of 0.9 gm. of neo-arsphenamin.

January 24, he returned to the clinic, complaining of a tightness in the region of the stomach, inability to digest his food, nausea, regurgitation of food, and constipation. This, he stated, had really commenced about two weeks previously, that is, shortly after his third injection. Examination revealed that he was jaundiced, and roentgen-ray examination showed his liver to be enlarged. The brief interval between the beginning of neo-arsphenamin treatment and the onset of his liver disturbance, and the irregularity of this treatment, led to a diagnosis of a hepatic Herxheimer reaction. Medication with the arsenical was therefore resumed.

The patient received 0.9 gm. of neo-arsphenamin, January 24 and 31, and was admitted to the hospital, February 1, for biliary drainage. February 4 and 11, he received 0.9 gm. of neo-arsphenamin. Five days later he began to complain of a feeling of numbness and tingling in the fingers and toes. Arsenical medication was stopped.

Bilirubin Blood Studies

Date	Bilirubin Parts per Million	Titrable Alkalinity, C.c. Tenth Normal per 100 C.c. of Blood
1/31/24	84.5	..
2/ 4/24	130	..
2/ 7/24	175.5	..
2/10/24	136.5	33
2/14/24	149.5	..
2/18/24	81.9	27
2/25/24	18.9	28
2/28/24	5.9	..
3/ 3/24	1.6	35
3/ 6/24	1.0	36

HOSPITAL RECORD

The patient was admitted to the hospital, February 1. His chief complaint was a tight feeling in the epigastrium. There was nothing of especial interest in the family history. Measles was the only childhood disease he had had; but since childhood he had asthmatic attacks and "rheumatism" in the joints for the last fifteen years. He had had gonorrhea three or four times. There was a penile sore in May, 1923, and a generalized eruption occurred in July, 1923.

About three weeks before admission, the patient experienced, for the first time in his life, a tight feeling in the epigastrium almost immediately after eating, which was not relieved until he had a bowel movement. He attributed his condition to the neo-arsphenamin injection (he said that it developed after the second one). He had had six intravenous injections to date. Belching sometimes gave relief. He had a sticky taste in the mouth, and likewise complained of pains in the knees and elbow joints. His appetite was good; he had no abdominal pain, simply a distended feeling. He was constipated. As far back as he could remember, he had had a chronic bronchitis. There were no acute visual disturbances, and he never had injections previous to coming to the clinic for syphilis.

Physical Examination.—The patient was well nourished and well developed, and apparently was not suffering from marked discomfort. The pupils reacted to light and in accommodation; the right pupil was irregular in outline, distorted and adherent. There was impairment of vision in the right eye. The sclera and conjunctivae were yellow. There were no ocular palsies. The ears were normal to examination. There was some nasal obstruction, as air could not be inhaled freely. The tonsils were markedly enlarged, but did not appear to be infected. The posterior pharynx contained an abundance of thick mucus. The teeth and gums were in bad condition; the tongue was coated, the breath was foul, and the mucous membrane beneath the tongue was yellow. The posterior and anterior cervical lymph nodes were enlarged. The expansion of the chest was equal on the two sides; further examination revealed nothing abnormal in the lungs. There was a systolic murmur over the mitral area of the heart. The abdomen was full, distended and tense. The upper edge of the liver was on a level with the sixth rib in the midaxillary line; the lower edge was slightly palpable 7 cm. below the right costal margin in the midline. The stomach was dilated and ptosed. The border of the greater curvature was on a level with the umbilicus. The inguinal glands were enlarged and palpable. The extremities were normal except for palpable epitrochlear lymph nodes. The reflexes were normal except that the right knee-jerk appeared to be diminished.

Examination by Dr. Bockus of the stomach clinic, service of Dr. George M. Piersol, revealed arsphenamin jaundice, syphilitic hepatitis and gastroptosis.

Urinalyses, February 2, 5 and 7, were negative except for the presence of bile; February 9, same as the foregoing, with urobilin as well. No further abnormalities were noted February 17, and March 3, 16 and 24.

The blood, examined February 2, 9, 23, 28 and March 5, 14 and 17, was normal.

A phenolsulphonephthalein test, March 18, resulted in the return of 35 per cent. in the first specimen, 10 per cent. in the second specimen, and 5 per cent. in the third.

A Kolmer complement-fixation test, February 6, was negative, although moderately positive, February 4, and weakly positive, February 11.

A phenoltetrachlorphthalein liver test, February 5, resulted in the recovery of 15 per cent. of the dye at the end of fifteen minutes, and 5 per cent. at the end of one hour. None was recovered at the end of two hours.

Since February 17, the "tingling" in the hands and feet had developed into definite pains in the arms and legs, with loss of power in all extremities. The patient had become bedridden, and on March 7 was referred to the neurologic department, service of Dr. Rhein, for an examination and report, which was as follows: There was weakness of both arms and legs, especially the extensors. The tendon reflexes were absent. There was tenderness over the nerve trunks. There were no sensory disturbances. The diagnosis was multiple neuritis.

April 19, Dr. Rhein reexamined the patient, and found general loss of power in the arms and legs; the extensors of the hands and feet were weaker than the flexors. There was no facial, tongue or throat involvement. There was hyperesthesia of the feet. The abdominal reflexes were absent; the plantar reflexes were present; the knee jerks were absent, as well as the arm jerks. There was generally more power than at the last examination.

May 8, the patient was discharged from the hospital on his own request. His condition at this time was improved, but he was far from normal. The extensors of the wrists were still very weak, although he was now able to pick up objects fairly well. The neuritic pains had practically disappeared.

July 15, 1924, almost five months after the multiple neuritis began, there was no pain or marked tenderness over the nerve trunks. The patient was unable to walk without crutches, and there was still a right partial wrist drop. He stated that he had improved considerably since he left the hospital; his general condition was excellent.

1402 Spruce Street—1714 Pine Street.

Instructors Should Do Research.—The splendid opportunity of the modern medical school should consist, to a large extent, in the fact that no student is taught by instructors who are not engaged in endeavors of inquiry in the subjects which they teach, and no investigator is entirely deprived of the stimulating contact with the fresh minds of eager and well prepared students.—Zinsser, Hans: *Boston M. & S. J.* **191**:1059 (Dec. 4) 1924.

HUMAN MILK

ITS COMMERCIAL PRODUCTION AND DISTRIBUTION *

B. RAYMOND HOOBLER, M.D.
DETROIT

The commercial production of human milk and its distribution in containers direct to the home have passed through the experimental stage. It cannot be said, however, to have reached a dividend paying basis, unless one is content to count as such dividend the life saving qualities which this commodity is known to possess when given to certain sick or premature infants.

As early as fourteen years ago, Dr. Fritz Talbot had a few mothers express their milk and deliver it in bottles to the Floating Hospital for use during the day. He records that several quarts were used during the summer with excellent results. No mention was made of the cost or the manner of collection of this milk.

About this time, while yet an undergraduate, I heard Holt state that human milk could be purchased through a private nursing home at the rate of $15 a quart. Alas, how few parents of sick or premature infants could afford to pay such a price. These two incidents led to a determination to find out whether mothers could be induced to produce and sell their milk for money. Many mothers, it is true, had served as wetnurses, and mothers of all time have been willing, for sentimental reasons and with no thought of remuneration, to share their breasts with babies other than their own; but here was another type of service, disconnected from any sentimentality, involving time and labor, removed afar from the inherent sympathy which a mother feels for the sick and helpless infant. Would she respond to the call to sell her milk for money knowing only that it would help some sick infant? Miss Wadley of the Social Service Department of Bellevue Hospital helped solve this problem.[1] She proved that mothers could be induced to act as producers solely on the basis of money.

TABLE 1.—*Milk Produced*

Year	Ounces
1914	No record
1915	No record
1916	16,462
1917	68,013
1918	50,149
1919	34,270
1920	43,802
1921	81,975
1922	55,849
1923	63,722
Total	414,242

Since that time, several institutions have discarded the use of wetnurses and are securing breast milk from reliable mothers, who deliver their product in sterile containers with the same regularity as any commercial producer. The industry, however, has passed through many vicissitudes, just like any other industry; but each year it becomes more firmly established, and will in time become a recognized occupation for many mothers.

I am fortunate in being connected with the Detroit bureau of wetnurses, whose operations cover a period of ten years, and whose actual output during the last eight years has been 414,242 ounces of human milk, approximately 13,808 quarts.

During this entire time careful records have been kept, and from them we may glean many interesting facts which we hope will encourage other communities to take up the work. It will be interesting and instructive to note the cost of producing and distributing an ounce of breast milk each year for the last eight years. Our present overhead expense could care for handling 100,000 ounces yearly, which would bring the cost of production to 10 cents an ounce. The cost of production includes the amount paid the mother, which is a flat rate of 10 cents an ounce, plus the cost of carfare for coming to the bureau either to express the milk or to deliver it in bottles. The remainder is overhead.

TABLE 2.—*Cost of Production and Distribution*

Year	Cost per Ounce
1916	$0.21
1917	0.21
1918	0.20
1919	0.19
1920	0.19
1921	0.19
1922	0.18
1923	0.15

Where does the bureau get its money to pay the cost of operation? Largely from private patients and from institutions. In Table 3 it will be noted that the bulk of the money comes from private patients who have been referred to the bureau by pediatricians and the medical profession generally.

It should be noted that nothing is included for rent or refrigeration. The bureau occupies quarters in the Woman's Hospital and Infants' Home, of which it is an integral part, and is operated under the direction of a committee from the hospital board and representatives of the Detroit Pediatric Society. The bureau employs two full-time officers.

A question naturally arises concerning the disposition of our 1923 output and the prices obtained per ounce. In Table 5 it will be noted that 30 cents an ounce was the maximum price charged. This charge is made only when it involves no hardship. In cases in which the milk is needed and the parents are unable to pay the maximum price, the charge is scaled down to their paying ability; but in no case is a baby denied milk, as will be seen by the amount that has been furnished without cost.

The bureau has been in operation a sufficient length of time to have a large clientele, and some mothers have raised as many as three consecutive babies on the milk furnished by the bureau, so that with these mothers the fear of being unable to feed their babies breast milk has entirely disappeared. Many are the expressions of gratitude by the mothers whose babies have been brought through a stormy nutritional period.

TABLE 3.—*Source of Revenue During 1923*

	Amount
Private patients	$5,886.80
Children's Hospital of Michigan	1,231.57
Woman's Hospital	810.20
Other institutions	351.90
Funds to cover free distribution	1,107.89
Total	$9,388.36

It will naturally be asked how the bureau can stand ready at all times to supply a fluctuating demand for its product. It keeps a sufficient number of producing mothers on its payroll to supply more than enough to

* Read before the American Pediatric Society, Pittsfield, Mass., June 5, 1924.

1. Hoobler, B. R.: Arch. Pediat. 31:171 (March) 1914.

cover its needs for private cases. This excess, each twenty-four hours, is distributed free of charge to hospitals caring for sick and premature infants. Should calls come in from private patients, this excess is drawn on, and not so much milk is available for free distribution.

It would be interesting to know something about our producers—how we get in touch with them. The largest portion come to us in answer to advertisements in the daily press. Others come to us by reference.

Not all that apply are found satisfactory. They must come up to a certain rigid standard. They must: (1) be healthy, have a negative Wassermann reaction and be free from tuberculosis; (2) have clean personal habits; (3) live in a clean home; (4) nurse their own healthy babies up to 8 months; (5) express milk at least twice daily; (6) keep milk on ice until delivered, and (7) supply at least 16 ounces daily.

It might be interesting to know just what recompense is made to these producing mothers. Dr. Chapin reported to this society last year that one mother had earned nearly $1,000 during 1922. We have a mother

TABLE 4.—*How the Revenue is Expended*

Expenditures	Amount
Paid to producers	$6,285.91
Salaries of paid workers	2,375.00
Operating automobile	677.49
Carfare and office expense	35.47
Advertising	14.50
Total	$9,388.36

who has been at the bureau during three lactating periods, during the second of these periods, extending over fourteen months, her income from the bureau was more than $3,500. This so encouraged her that when the bureau refused after the fourteenth month longer to use her milk, she purposely became pregnant that she might again become a producing mother. She is again at the bureau earning a good income which is enabling her to buy her own home, and incidentally to enjoy many comforts previously beyond her reach.

The bureau does not stipulate the diet the producing mother should use, but recommends one with a narrow protein ratio which was found to be most suitable.[2] Any article causing an odor to the milk is strictly prohibited.

TABLE 5.—*Distribution of Product*

Purchasers	Ounces	Price
Private patients	18,318 at	$0.30
Private patients	502 at	0.25
Private patients	3,071 at	0.20
Private patients	18,314 at	0.15
Private patients	5,013 at	0.10
Institutions	10,815 at	0.08
Private cases too poor to pay	6,654 at	no cost

We believe there are many mothers who are natural milk producers, and from among these there will grow up in each community an ideal occupation for all who are willing to devote themselves to this lucrative employment. It does not interfere in any way with their home duties. Their own babies are kept under observation, and the visits of the nurse to their home tends to raise the standard of living among them. The old conception of wetnurse has disappeared at the bureau, and there has come in its place the much more satisfactory occupation of producing mothers.

2. Hoobler, B. R.: Human Milk Problems, J. A. M. A. 69: 421 (Aug. 11) 1917.

The bureau has used manual expression of milk from the very beginning, but from some observations made on a series of mothers it was found that breasts were not always carefully stripped, in which case the quantity of milk tended to diminish, so that we are seeking a method by which the breast can be completely emptied. We are installing one of Dr. Abt's electric milkers in the

TABLE 6.—*How Producers Are Secured*

Former wetnurses	10
Answered advertisements	25
Referred by physicians	7
Referred by clinics	7
Total	49

hope that, by removing the manual labor from the process, we shall not only get more milk from each producer but attract other producing mothers who are at present deterred from supplying milk by the ardous labor of expressing it.

SUMMARY

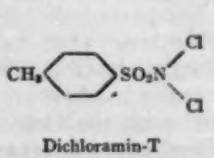
These details of a ten year observation have been given with a view of encouraging other communities to take up this work. The greatest percentage of infant mortality is among premature and sickly infants, during the first one or two months of life. Breast milk, if available, would save many of these lives. At present, there seems to be no satisfactory substitute for breast milk at this early age, particularly if the infant is a weakling; and there seems no better way to reduce the mortality of this early period of life than to increase the production of human milk. I believe that every community supporting a maternity hospital is a potential center for such a producing group.

David Whitney Building.

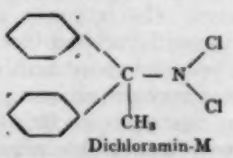
DERMATITIS FROM DICHLORAMIN-M (METHYL-DIPHENYLMETHYL-DICHLORAMIN)

JAMES B. McNAIR, A.M.
AND
ANDREW M. NEFF, S.M.
CHICAGO

Methyl-diphenylmethyldichloramin is a new compound recently synthesized by Neff in some work he is doing in the study of a molecular rearrangement under the direction of Julius Stieglitz. To avoid the cumbersome chemical name of the compound we will call it dichloramin-M. This substance is of interest not only because of its skin-irritating properties, but also on account of its relation to Dakin's dichloramin-T. In naming dichloramin-M, we have followed Dakin's analogy; M for methyl, T for toluene.[1]



Dichloramin-T



Dichloramin-M

Dichloramin-M is a white crystalline substance; insoluble in water; soluble in ether, acetone, ethyl acetate, chloroform, carbontetrachlorid and benzene;

1. Dakin, H. D.: On the Use of Certain Antiseptic Substances in the Treatment of Infected Wounds, Brit. M. J. 2: 318-320 (Aug. 28) 1915.

difficultly soluble in absolute alcohol, 95 per cent., and ligroin. The chlorin atoms are both electropositive, as in hypochlorites, and the compound may therefore be considered as a substituted amid of hypochlorous acid. When hydrogen is substituted for chlorin, in chloramin-M, the original amin, methyl-diphenyl methylamin, is formed. The amin is slightly soluble in water, and its solution turns litmus blue. More complete chemical properties will be published later.

REPORT OF CASE

A young man first complained of an irritation of the skin while working with dichloramin-M about a year ago. No irritation was noticed just previous to working with the compound. He visited several physicians, who diagnosed his case as eczema. When he stopped experimenting with the compound, the disease disappeared, but recurred every time he worked with it. He has had about half a dozen recurrences of disease, with a noticeable increase in susceptibility.

About twelve hours after working with the substance, a redness and itching of the skin would be noticed between the fingers. Small red papules would soon appear uniformly distributed over the inflamed area. The disease would spread to the backs of the fingers and hands, and would sometimes affect the palmar surfaces. Finally vesicles would form and rupture, allowing a clear, pale yellow serum to escape. The duration of the attacks was generally from five to seven days after the outbreak. The patient is quite susceptible to poisoning from poison oak (*Rhus diversiloba* T. and G.), and the dermatitis caused by dichloramin-M affected him similarly.

The prophylactic substances found best in preventing the harmful action of dichloramin-M on the skin were a 15 per cent. solution of potassium iodid acidified by acetic acid and a saturated solution of sodium thiosulphate. Water solutions of these substances were used to wash the hands after exposure to the irritant. These chemicals reduce the compound to its nonirritant amin or amin hydrochlorid form.

COMPARISON WITH DICHLORAMIN-T [2]

Both of the dichloramins discussed here have similar solubilities. Both are insoluble in water, difficultly soluble in ligroin, but soluble in chloroform and benzene (benzol, C_6H_6). Both are readily decomposed by similar substances, which would be expected from their chemical constitution. Strong mineral acids liberate chlorin. They react with most substances, such as acids, alcohols, hydrogen peroxid and certain metals. They liberate bromin from bromids and iodin from iodids in neutral solutions, as might be expected from the positive chlorin.

It is quite possible, therefore, that the dermatitis noticed by Dakin [3] while working with dichloramin-T is also caused by positive chlorin, and that hydriodic acid and sodium thiosulphate would serve as prophylactics for it. Two cases of skin irritation produced after several weeks of continuous use of dichloramin-T dissolved in eucalyptol have been reported.[4] These cases were similar to ivy poisoning, and were considered as possibly caused by eucalyptol. From the irritating properties of decomposing dichloramin-T, now known, it seems probable that these cases could also have been caused by it.

Since these compounds, chloramin-T and chloramin-M, are derivatives of hypochlorous acid and have the outstanding characteristic of a positive or oxidizing chlorin atom, as in hypochlorites, it seems reasonable to assume that the disinfecting as well as the irritating properties are due to their active chlorin.

The disinfecting properties of dichloramin-M are being investigated.

SUMMARY

1. Dichloramin-M has chemical and physical properties quite similar to Dakin's dichloramin-T.

2. Dermatoses similar to ivy poisoning are produced by both.

3. Dermatitis caused by dichloramin-M can be prevented by washing exposed skin surfaces with reducing agents such as aqueous potassium iodid or sodium thiosulphate.

4. It is possible that the dermatitis caused by dichloramin-T could be similarly prevented.

5. The disinfecting properties of dichloramin-M are being investigated.

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2. A detailed study of the properties of dichloramin-T is reported by Leech, P. N.: Examination of American-Made Chloramine-T, Dichloramine-T, Halazone and Preparations, J. Am. Pharm. A. **12**: 592-602 (July) 1923.

3. Dakin, H. D., and Dunham, E. K.: Solvents for Dichloramin-T, Brit. M. J. **1**: 51-52 (Jan. 12) 1918.

4. Dakin, H. D.; Sweet, J. E.; Hendrix, B. M., and LeConte, R. G.: A Report of the Use of Dichloramin-T (Toluene-parasulphon-dichloramin) in the Treatment of Injected Wounds, J. A. M. A. **69**: 27-30 (July 7) 1917.

A PHYSICAL PROBLEM IN BILATERAL HYDROTHORAX

WITH A NEW METHOD OF MANAGEMENT

HARRY D. PIERCY, M.D.
CLEVELAND

Bilateral hydrothorax of an extreme and persistent degree is not frequently encountered. Such a case was recently under my observation for a period of more than ten months. The rapidity and regularity with which the fluid accumulated made aspiration of the chest imperative at frequent intervals. Unilateral aspirations of the chest, however, constantly provoked severe cardiorespiratory reactions, and these became so severe that the problem of the method of their production demanded solution. The exclusion of other factors resolved this problem into one of displacement of the mediastinum due to disturbance of the fluid pressure acting on it. The recognition of this fact led to the aspiration of the two chests simultaneously with the result that the cardiorespiratory reactions no longer occurred. A survey of the literature has not disclosed a similar discussion and management of this problem, and the subject is of sufficient importance to justify this report.

REPORT OF CASE

History.—A Jewish woman, aged 38, seen, Sept. 7, 1921, had always been well except for scarlet fever when a child and a brief attack of "kidney trouble" eight years previous. She had acquired a syphilitic infection in April, 1919, and had received a few injections of arsphenamin and a number of injections of mercury, all of which had been poorly tolerated, a brief attack of jaundice having followed two injections of arsphenamin. She was married; her husband was living and well, as was their four children.

The present illness started four months before she consulted me, with general body pains and headache. Following this, her feet and then her legs began to swell, gradually getting worse. The abdomen also enlarged during this period of time, and with its enlargement she had grown short of breath, so that she suffered air hunger on slight exertion; for the past two months she had been conscious of a sense of fulness in the chest. She stated that she had passed very little urine during the past two months, and that, although her intake of fluids and food had been decidedly less than previous to this time, she had increased in weight from 130 to 150 pounds (from 59 to 68 kg.).

Examination.—The skin of the face and body had the characteristic "pasty" appearance commonly noted in nephritis. There was edema of the forehead and about the eyes, and of

both lower extremities up to and including the flanks. In the chest, signs indicating the presence of fluid up to the inferior angle of the scapula on both the right and left sides were noted. There was no precordial activity. The cardiac dulness extended on the left as far as the anterior axillary line and, on the right, 2 cm. beyond the right sternal margin. The heart sounds were accentuated at both apex and base, were rhythmic and regular, and were in normal sequence. There were no murmurs. The radial pulse was 80, of moderate tension and of equal volume on the two sides. The systolic blood pressure was 116; diastolic, 94. The abdomen was pendulous, and there was marked adiposis of the anterior wall. None of the contained viscera were palpable, and there was no evidence of the presence of free fluid. The pelvis and neuromuscular system were negative. The urine was clear, and acid in reaction; the specific gravity was 1.024; there was no sugar; there was a heavy trace of albumin; microscopic examination showed epithelial cells but no blood or casts. The phenolsulphonephthalein test gave 48 per cent. in two hours; the blood urea nitrogen was 50 mg. per hundred cubic centimeters; the blood chlorids were 0.62 gm. per hundred cubic centimeters; white blood corpuscles, 6,400; hemoglobin, 80 per cent., Tallqvist; red blood corpuscles, 4,860,000; the blood Wassermann test was 4 plus.

The diagnosis was subacute nephritis with water, salt and nitrogen retention; bilateral hydrothorax; chronic syphilitic infection.

Clinical Course.—The patient was placed in Lakeside Hospital, where she remained from Sept. 12, 1921, to May 25, 1922. She was put on a salt free, nonprotein diet, hot packs and diuretics. Antisyphilitic treatment had no favorable influence on the nephritis, and after a brief trial was discontinued. Albumin was constantly present in the urine, but casts did not appear unless the albumin rose to 3 gm. per liter, when hyaline and granular casts became very numerous. The edema rapidly disappeared from the lower extremities and never at any time constituted a conspicuous feature in the case. The blood urea nitrogen fell to 40 mg., and the chlorids to 0.52 per cent. The patient, however, showed no real improvement, and six weeks after leaving the hospital, becoming despondent over her hopeless condition, she decided to accelerate the process which was slowly taking her life, and took four 7½ grain tablets of mercuric chlorid. She died on the eighth day.

COMMENT

The constant presence of fluid in the chest was the most striking clinical feature of this case. It was always present in apparently equal amounts on the two sides, for percussion rarely indicated a difference of more than a finger's breadth in the upper levels, except for a few days following the withdrawal of an amount from one side. Following this, the fluid would reaccumulate in the aspirated chest and slowly mount to the level of the fluid in the opposite side. September 13, the day following her entrance into the hospital, 365 c.c. of clear, golden yellow fluid was removed from the left chest. The specific gravity was 1.012. The albumin content was 15 gm. per liter. The cell count was 320 cells per cubic millimeter. The smear and culture were negative for evidence of infection. This thoracentesis, combined with other measures, seemed to exert a favorable influence on the patient, and five days later the edema was gone out of the extremities and no signs of fluid were found in the chest or abdomen. Ten days later the patient became orthopneic, and fluid was present in both chests a little above the angle of the scapula. There was also free fluid in the abdomen and edema of the lower extremities and in the flanks. A thoracentesis of the right chest was attempted, but this was interrupted when 900 c.c. of fluid had been removed because of a severe cardiorespiratory reaction, and it was several hours before the patient was again comfortable.

October 15, 1,000 c.c., October 30, 1,100 c.c. and November 18, 1,000 c.c. of fluid was removed from the left chest, the fluid having on these occasions risen to slightly above the angle of the scapula. All three of these thoracenteses were followed by severe cardiorespiratory reactions, characterized by substernal pain, a sense of suffocation and a feeling of apprehension, a rapid and irregular pulse, cyanosis of the lips and nails and extreme nervousness. So severe, in fact, were these reactions that this procedure came to be undertaken with dread on the part of both physician and patient.

November 25, the patient was having extreme air hunger, and the fluid dulness extended up almost to the base of the spine of the scapula on both the right and left sides. A thoracentesis was made on the right side. When 400 c.c. had been collected, the patient suddenly collapsed; the pulse was weak and thready, the lips and nails were cyanotic, and the respirations were gasping. Restorative measures were quickly applied, and after a few hours the patient was again comfortable. The following day an attempt was made to aspirate the left side, when the same symptoms intervened when somewhat less than 500 c.c. had been collected.

The inability to aspirate this chest in the classical manner when the patient was suffering acutely from air hunger created a problem that demanded prompt solution, for it was apparent that the patient could not long survive such marked encroachment of the transudate on the lungs.

A careful consideration of the problem ruled out the possibility of a pleuropulmonary reflex. There had been no inflammatory disease of the pleura or mediastinum; the skin and pleura at the site of puncture was always carefully infiltrated with a local anesthetic; every precaution was taken to avoid injury to the lung; aspiration was always proceeded with slowly and deliberately.

The exclusion of the foregoing factors as possible causes of the reactions led me to consider that the difficulty in this case might depend on a problem in hydrostatics. With what did we have to deal? Here was the mediastinum with its elastic limiting membrane of reflected pleura compressed between two high columns of fluid, the density of which was greater than that of water and far greater than that of the air-containing lung. Although these columns of fluid were very high, coming up to the lower margin of the fourth rib in the internal scapular line, there was equalization of pressure on all sides, with no displacement of the mediastinum. At this level, however, the superior mediastinum with its easily distorted vessels and nerves would be especially subject to pressure changes in the chest. When 500 c.c. of the fluid had been removed from one side, the pressure of this was added to the pressure of the column of fluid on the opposite side, with the result that the mediastinum and its important contents would be pushed to the side of the lower fluid level, with resulting traction on and distortion of important vessels and nerves. When the bilateral hydrothorax was at a lower level, as on previous occasions, as much as 1,000 c.c. had been removed from one side with, to be sure, considerable discomfort to the patient; but the pressure of a column of fluid is proportional to its height and at lower levels, say, to the angle of the scapula or a little above, the superior mediastinum would not be under direct pressure from the fluid column and little lateral displacement would occur. When, however, the fluid had reached a point on the level of the fifth dorsal vertebra and was opposed by a column approximately equal in height, the lowering of the level on one side would cause an increasing contralateral pressure on the vena cava,

the auricles and pulmonary veins, all structures of comparatively low internal pressure, with resulting distortion of these and of the closely associated nerves, the vagi, the phrenics and the recurrent laryngeal.

It was not likely that the phenomena that were observed on the two preceding days when between 400 and 500 c.c. of the fluid had been removed from the right and from the left chest, respectively, could be directly charged to a single factor; for it would be impossible for the slightest displacement of any structure in the mediastinum to occur without a relative displacement of all other contained structures. If displacement of the mediastinum was responsible for the cardiorespiratory reactions, a consideration of the character of the structures affected by this displacement offered many reasons for a profound disturbance in the respiratory and circulatory systems.

A consideration of the comparative ease with which fluid may be drawn off of one side in large bilateral effusions of inflammatory origin brought to mind the fact that in such cases the mediastinum is not so easily displaced, because the preceding and accompanying pleuritis and mediastinitis leave it more or less firmly fixed by adhesions to the surrounding structures. In the case under discussion there had been no preceding inflammatory disease of the chest, and it was reasonable to assume that the mobility of the thoracic organs was not greatly, if at all, impaired. It was also felt that the transudate character of this fluid permitted inferences as to the physical condition of the chest which would allow of the hypothecated modus operandi of this cardiorespiratory reaction.

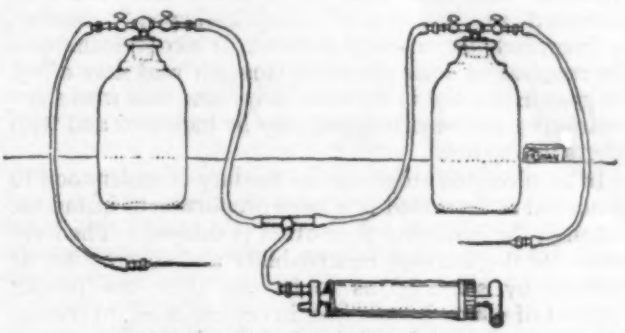
Since experience had shown that every aspiration of this chest had provoked a severe reaction, and since these reactions had grown more violent as the fluid rose to higher levels on the two sides, it followed, if the foregoing reasoning was correct, that the simultaneous aspiration of the two chests offered a solution to this problem. By withdrawing fluid from the two sides simultaneously, the two columns of fluid would be gradually and equally lowered, with no resulting displacement of the mediastinum, and the emptying of the chest could be done safely and efficiently.

BILATERAL ASPIRATION OF CHEST

Accordingly, an apparatus was devised which employed two aspirating needles and two bottles. A T tube connected these two bottles with the aspirating pump. The set-up is clearly indicated in the accompanying illustration. It was at first proposed that only one bottle be used, the T tube connecting the two needles, but it was readily seen that such an arrangement would permit of no check on the rates at which the fluid was flowing from the two sides, or the sudden occlusion of a needle, a thing that happens not infrequently during a thoracentesis, would not be immediately recognized and such an accident would, of course, amount to a failure of our efforts.

The most gratifying success attended the first use of this method. A point was chosen in the posterior axillary line in both the right and left chests and was carefully cocainized. A large bore needle, connected with one of the bottles, was inserted on the right side, and similarly the needle connected to the other bottle was inserted in the left side. The stopcocks were opened, and it was observed that the fluid was flowing readily and equally from the two sides; 1,200 c.c. was removed from each chest without the patient giving any sign of discomfort, either during the procedure or following it. This method of aspirating was repeated from time to time over a period of seven months, during which time ten aspirations were done. The total result of any one of these was not less than 2 liters, and occasionally several hundred cubic centimeters more was obtained. No unpleasant sequelae and no unusual discomfort were experienced by the patient, and in this case the bilateral simultaneous aspiration of the chest proved to be not only the most efficient but also the safest and most comfortable procedure for the patient.

Careful search has been made in the *Cumulative Index* and the *Index Medicus*, and numerous works on the treatment of hydrothorax have been consulted with the result that no reference to a procedure such as this has been encountered. It therefore seems worth while to report this modification of the classical operation for hydrothorax with the hope that this solution of the problem of the management of bilateral hydrothorax may be of value in some similar case. This method should also commend itself for use whenever it is necessary to aspirate a large bilateral effusion due to any cause, inflammatory or noninflammatory.



Apparatus for bilateral aspiration of the chest.

SUMMARY

This was a case of marked and persistent bilateral hydrothorax accompanying a severe nephritis, in which cardiorespiratory reactions were constantly provoked when unilateral aspirations of the chest were attempted. When the fluid had risen to a point on the level of the fifth dorsal vertebra, these reactions constituted an obstacle that prevented the withdrawal of sufficient fluid to relieve the patient, and presented a problem in hydrostatics which was solved through aspiration of the chest, being prosecuted with efficiency and safety by withdrawing the fluid simultaneously from the two sides.

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The Laboratory Worker and the Clinician.—It is natural, nay inevitable, that as medical science grows and advances, some of the workers in the field should elect to follow the path which leads through the laboratory, whereas to others the wards make a stronger appeal; and thus is taking place a differentiation of medical workers into distinct groups, and there is danger that the fission may go too far. The worker in the laboratory, wedded to his more exact methods, and distrustful of those with which the clinician is often compelled to be content, is apt to place his bedside colleague in a lower grade or caste than his own. He is apt to look too much at the disease and too little at the patient, and to forget how greatly the former is shaped by the reactions and idosyncrasies of the latter.—Garrod, A. E.: *Lancet* **2**:845 (Oct. 25) 1924.

MOTILITY OF THE STOMACH AFTER LOCAL RESECTION FOR GASTRIC ULCER *

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Gastric ulcer is very frequently treated by local excision with or without gastro-enterostomy. Excision may be accomplished by knife or cautery; the result in either case is dependent on the loss of stomach wall. The present study is not an appeal to economize gastric wall in removing ulcer, but an inquiry into the resulting functional capacity of the stomach after adequate stomach wall with the ulcer has been excised. The pylorectomies and partial gastrectomies are not considered. Gastrectomies are to be discussed in which the segments removed from the stomach are sometimes described as "triangular," "saddle-shaped," annular, or irregularly circumcized sections. It is conceivable that the removal of such pieces of stomach wall may affect the gastric motility in different ways, and that with some excisions gastro-enterostomy may be indicated and with others it may not.

In an ulcerated stomach, the motility is understood to be normal or increased in a large proportion of instances, although the emptying time often is delayed. The local cause for the increase in irritability and contractility is believed by some of us to be the ulcer, the proper removal of which is sufficient, in certain cases, to restore approximately normal contractions in the stomach. Much of the patient's distress appears to be associated with the gastrospasm, which is thought practically invariably to accompany ulcer. In the lesser curvature lesions, these spasms occur as incisuras at opposite points on the greater curvature. Occasionally, ulcers in the secreting oral end of the stomach do not give regional motor signs that are as noticeable as the increased motor disfigurement at the pyloric end; in such instances, the lesion may erroneously be located at the pylorus, or outside the stomach altogether. The gastric irritability subsides after the excision or destruction of the ulcer, provided proper medical treatment has been carried out, and provided, further, that the ulceration or the resection operation did not deform the stomach or divide important gastric nerves.

To render the ulcer patient symptom-free or to restore normal gastric motor activity, it is essential to preserve intact the factors entering into the gastric tonus and contractions. These factors include the stomach wall itself, with its smooth contractile muscle and nerve plexuses, the extrinsic motor nerves, and, finally, continued normal respiration, circulation and intra-abdominal tension.

It is important to differentiate between extrinsic and intrinsic gastric motility. By the former is understood the gastric responses or reflexes arising from impulses started in other organs and conveyed to the stomach by way of the motor nerves. By the latter is meant the contractions initiated by or involved in the reception and expulsion of the gastric meal. Ample proof is at hand that the stomach, without its motor nerve connections, is fully capable of automatically carrying on the function of receiving, mixing and expelling food passed into it. In a previous article,[1] experiments were reported in which it was shown that stomachs of dogs with the left or right vagus divided, or with both vagi cut, segmented and contracted in response to a bismuth meal, in every respect as normally as the controls. Not only does food contact with the lining of the stomach, with or without the motor nerves intact, arouse myogenic or intrinsic contractions, but also pinching or clamping or the irritation from ulcer appears to excite gastric contractions of the same character. The muscular pyloric portion of the stomach is the part where this local muscular response essentially comes into play. Operations that deform this distal part bring about failure in the gastric contractions by crippling the sphincteric fibers. An operation on the human stomach that entirely removes the coordinating influence of the extrinsic motor nerves leaves the emptying efficiency practically unimpaired, but gives the patient considerable discomfort. This may account for negative roentgen-ray findings and the persistence of reflex gastric symtoms in a few return postoperative cases.

Failure does not follow section of the motor gastric fibers in the midfundal portion of the stomach, probably because enough of the oral stomach remains coordinated with the other viscera to act as a proper pacemaker for the sphincteric end. Following a mesogastric annular resection, for example, enough oral stomach remains in normal contact with the rest of the organism through the vagi to receive impulses and start contractions, which determine the character of the contractions in the independent pyloric part. In this way, the important protective mechanism of vomiting is preserved, peristalsis may be increased, or relaxation may be brought about. If this mechanism is necessary in health, how much more important must it be in disease; in cholecystitis or in appendicitis, for example, when nausea protects the patient against overeating, and vomiting removes food which the organism is incapable of taking care of. As a working rule, it may be safe to say that that portion of the stomach through which the surgeon can conveniently and effectively perform an annular resection is the proper site for the operation. In our experience, terminal gastrogastrostomy after resection has been satisfactorily carried out only in the distal two thirds of the stomach, and almost always in the midfundal portion. It is difficult after pylorectomy, but occasionally feasible. Complete cross-section should probably never be done in the cardiac end of the stomach, even when such a procedure seems possible of accomplishment, because of the necessity of dividing the vagi and of segregating the stomach.[2]

Fig. 1. — Divisions of stomach according to indications for variations in technics of localized gastrectomies.

Numerous experiments from the Surgical Laboratory at the University and Bellevue Hospital Medical College confirm the belief that the vagi carry not only motor fibers to the stomach, but also afferent fibers, which reflexly increase the motility of the stomach. These fibers reach the stomach wall from the esophagus, pass

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* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Barber, W. H.: Enteroparesis, J. A. M. A. 79: 1824 (Nov. 25) 1922.
2. The same considerations seem to apply to the operation of esophagectomy.

along the lesser curvature, and send terminal branches to the anterior and posterior surfaces of the stomach. The particular function served by these fibers appears to be to bring the local neuromusculature into correspondence with changes transpiring in other organs and in other parts of the body. It is realized that conflicting reports on the vagus influences on the stomach have been made. Our earlier experiments, in which the vagi were stimulated at the cardia, introduced many variables, and, like many experiments of others, are very difficult of interpretation. In my experience, simple faradic stimulation of the cervical portion of one or both vagi has always been followed by contraction of the stomach. In many instances, stimulation of the central end of a divided cervical vagus is followed by

Fig. 2.—Normal stomach and normal response to vagus (faradic) stimulation.

Fig. 3.—Normal stomach plus slightly decreased vagomotor response following radial incision at the cardia.

contraction through impulses carried through the remaining vagus nerve. In recent experiments, stimulation of the appendix and gallbladder was followed by gastric contractions. These contractions could not be elicited after section of the left vagus nerve. The complexity of the thoracicolumbar (sympathetic) fibers seems to defy similar experiments on them, and in my experience have not brought any positive results. The sympathetic fibers may be presumed to inhibit gastric contractions, directly or through inhibition of the vagi. There seem to be observations enough on the significance of the vagi in gastric motility to regard them as the essential nerves involved in the visceral reflexes. On this basis, local resections should be planned, whenever feasible, that divide as few as possible of the trunk fibers of the vagi at the lesser curvature of the cardiac and fundal portions of the stomach.[3]

Two interesting problems present themselves at this time relating to section of important gastric nerves. Do the divided ends of a visceral nerve regenerate, and what symptoms follow a new ulcer in an annularly resected stomach? Observations on annularly resected human and experimental stomachs, in the experience of those of us at the University and Bellevue clinic, tend to show that the fibers do not grow in again. The independence of the aboral pyloric portions persists in roentgenograms taken during the first five years. One would expect a new area of abdominal wall localization for the pain, tenderness, and hyperesthesia in a patient with a new ulcer in the pyloric portion of a stomach previously resected for a mesogastric ulcer. Two such cases have come under my attention.

Both of these persons presented themselves with indurated lesser curvature ulcers, slightly to the right of the midportions of the stomach. The ulcer-bearing annular segment was removed in each instance, and terminal gastrogastrostomy was performed. Three years later, in one case, the patient returned with an upper left quadrant pain; and in eighteen months the other returned with midepigastric pain and tenderness, notwithstanding the fact that both patients had indurated ulcers at the pylorus, and both gave midepigastric localization for the pain and tenderness before operations for the primary ulcers. Belladonna, as was to be expected from the character of the ulcerations, did not relieve the symptoms or relax the pylori. As far as my experience goes, I will have to await similar cases or corroboration from others to determine even a working hypothesis for the abdominal wall localization of pain, tenderness and hyperesthesia of ulcer recurring at the pylorus after annular gastrectomy; it may be provisionally stated, however, that the gastric (vagus) nerves, divided under the conditions of an operation of this kind, do not regenerate.

It is generally understood that the circulation and respiration are constantly involved in preserving healthy contractions of the stomach, and furthermore, any influence that impairs these essential functions correspondingly interferes with the stomach's working capacity. There is an optimum intragastric pressure at which the contractions appear most forcible. Personal observations have indicated that the contractions fall off in force as the intragastric tension rises above or falls below this point. There are, of course, other factors besides the bulk increase in a hearty meal that raise the emptying force of the peristaltic contractions, and frequently lead to the desire to go to stool. Quantity of food and residue have been recognized as important elements in the laxative character of a diet and have led to the use of agar-agar and liquid petrolatum rather than the irritating cathartics. There is evidence that the use of these residue laxatives may give way to the practice of working out a properly balanced diet in each given case, and one that will normally distend and contract the stomach. These considerations belong particularly to the internist, whose cooperation is essential in the cases in which operation is performed for gastric ulcer. It need not be added that a tonically contracting

Fig. 4.—Stomach with longitudinal incision at the cardia and slightly decreased vagomotor response.

Fig. 5.—Approximately normal vagomotor response following cross-incision of greater curvature at the cardia.

abdominal wall helps stabilize the intragastric tension, and abdominal supports that are too tight or too relaxed are to be avoided. This, again, is a matter that should be taken care of as a routine in the postoperative case.

For purposes of discussion, the stomach may be divided into the muscular, or sphincteric, portion and the oral, or fundal portion. The lesser curvature and adjoining surfaces of the cardiac and fundal portions are most prone to injury in local excision operations. The lower end of the vertical arm of the lesser curvature, at the point at which it meets the horizontal arm and where the first large gastric branch of the pyloric artery joins the stomach, has been called the "C-point," or contractile point, in our experiments, because of the high degree of irritability and contractility found there

3. Reports from the foreign literature seem to indicate that the European surgeons have been going ahead more actively than we on the hypothesis that the vagi are the essential motor nerves of the stomach (Latarjet, A., and Wertheimer, P.: Presse méd. **31**: 993 [Nov. 28] 1923. Thomsen, E.: Acta Med. Scandinav. **60**: 66, 1924. Loeper, M., and Turpin, R.: Prog. méd., Dec. 5, 1923, p. 625). Latarjet and Wertheimer report section of the pyloric and other anterior and posterior vagus nerves on the stomach in twelve clinical cases of vagotonia or in patients with vomiting, hematemesis, epigastric pain, hypertonia and hyperchlorides. Ulcer or new growth were said to be ruled out, and symptomatic relief was reported.

in the intact stomach. Nerve fibers from the suprarenals and celiac plexus reach the stomach at this site, and the vagus trunks run on by this area downward and to the right. From a study of excised segments, Alvarez found the greatest irritability and contractility at the oral end of the lesser curvature. Between these two nervous areas, and extending over onto each surface for one third of the width of the gastric walls, is the part especially vulnerable in resecting for ulcer.

The pyloric portion is probably most often resected for ulcers occurring along the lesser curvature. From a study of the localization of the perforated ulcers for five years in the Third Division, Bellevue Hospital, it developed that all occurred within the first portion of the duodenum and pyloric portion of the stomach, and 76 per cent. within a radius of 2 inches from the edge

Fig. 6. — Marked decrease in vagomotor response following radial incision across lesser curvature at the cardia.

Fig. 7.—Stomach following annular segmental resection; oral segment normally responsive to vagomotor stimuli; aboral end irresponsive.

of the anatomic sphincter pylori. The triangular or saddle-shaped resection is most often carried out when the ulcer is simply excised. In the cautery operation, a cross incision may be carried transversely across the lesser curvature to expose a concealed ulcer; but, in any event, the ulcer and immediately adjoining tissue are cauterized out. In these knife and cautery excisions in the pyloric portion, it appears to be not the motor nerves, for they run in a downward direction away from the lesser curvature, but the circular muscular spirals that are injured. If the contractile impulse travels by way of the muscular fibers in this portion of the stomach, it should be blocked in proportion to the number of cross fibers divided. The concentration of these cross fibers must be greatest at the lesser curvature, because of the small size as compared with the greater curvature. The greater the longitudinal extent of a lesser curvature ulcer or of an incision or cautery destruction required to remove the ulcer, the greater, therefore, should be expected to be the number of sphincteric fibers severed, and the more complete the blocking of the peristalsis. Impulses may travel by way of vagus branches and provoke strong contractions, but the automatic motility, that which is aroused by the opaque meal and measured by means of the roentgen ray, is often very seriously retarded; in some such instances, twenty-four hour residues are reported. For this reason, gastro-enterostomy is often necessary after the medium and large sized resections of the lesser curvature of the pyloric portion, to provide for gastric emptying either by gravity or by forceful contractions above the plane of resection. It is probably not necessary in the small and superficial lesions. In opening the stomach in this region, it is believed that the cross or muscle-splitting incision should be used. It is remarkable that the annular resection, which is carried entirely about the stomach, leaves this pyloric portion hypermotile, but it is believed that the reason lies in absence of injury to the musculature and to the interruption of the visceromotor fibers. In this manner, a strongly locally reflex contracting distal stomach is created, ready to contract forcibly on and expel any food material passed into it from the normally coordinated oral stomach. In brief, it is believed that in surgical cases local resection alone is indicated for small ulcerations at the lesser curvature of the pyloric region, and for small and medium sized ulcers of the surfaces and greater curvature of the pyloric portion of the stomach; but that for fairly large lesions of the lesser curvature, or for deforming ulcers in other parts of the pars pyloric, or for any lesions that require multilating operations, gastro-enterostomy should be performed, in addition to the operation for the removal of the ulcer.

There are other considerations, however, beside that of motility that determine the wisdom of performing or omitting gastro-enterostomy after destruction or removal of a pyloric ulcer. Chief among these is probably that of recurrence of the ulcer. Although the removal of a very small ulceration or the simple inversion of a perforated ulcer may not seriously interfere with motility of the stomach, still, in view of the fact that in the large majority of cases the original cause of the ulcer is not removed, it is questionable whether or not in almost all instances of ulcer in the pyloric end of the stomach wherein the condition of the patient will permit, some form of gastro-enterostomy had not better be carried out. In the event that the risk is too great for the patient, anastomosis may be alone performed and resection postponed for a secondary operation.

That part of the stomach orad to the pyloric end comprises walls adjoining the lesser curvature and walls lying along the greater curvature. The great curvature portion is relatively a great silent area, and can endure large local excisions without serious motor impairment. The lesser curvature portion forms the pathway for the vagus nerve trunks, and cannot be divided crosswise without endangering the coordinated activity of the stomach or the ability of the stomach to respond to changes in other organs. The more orad section is carried out, the larger percentage of nerve fibers are sacrificed and the more complete is the segregation of the stomach. It is to be emphasized that vagus section does not appreciably interfere with the intrinsic motility of the stomach, as interpreted by the

Fig. 8.—Approximately normal vagomotor response following radial incision across lesser curvature of midstomach.

Fig. 9.—Normal vagomotor response in stomach with incision at pylorus; such incisions probably often simulate an ulcer.

roentgen ray. In other words, objectively, a resection high on the lesser curvature appears successful, but from the patient's standpoint it is very prone to be a failure. Ulceration may already have destroyed the motor nerves before operation is attempted. The wisdom of performing gastro-enterostomy in these cases seems to be debatable. It is difficult, from the standpoint of motility, to see how an anastomosis with the intestine can avail, provided the stomach's local reflex motility remains intact and there is no obstruction at the pylorus. To prevent severing the gastric motor nerves, it is suggested that lesser curvature ulcers within this oral portion of the stomach be removed from within outward and, as far as possible, peeled away from the serosa. This does not apply to malignant cases, but to those lesions considered in all prob-

ability inflammatory. In certain instances, it may be feasible to open the stomach through the anterior wall and cauterize the ulcer off of the peritoneum. In other cases,[4] the serosa may be split longitudinally and parallel to the vagus trunks; thence, by retraction, ulcer resection may be carried out. The anatomic relations of an ulcer high on the lesser curvature and the surgical difficulties may be taken as reason for continuing medical treatment in proper cases, with the possible additions of either jejunostomy or gastro-enterostomy, or both.

Fig. 10.—Drawing of human stomach from cast and from dissected specimen lent by Professor Senior; blood supply and extensive ramifications of anterior vagus apparent, also normal vertical position of organ. (From author's article, Ann. Surg. **66**: 672 [Dec.] 1917.)

Experiments have been carried out on stomachs incised in various directions in the intact abdomens of dogs properly anesthetized, and the vagomotor contractions were observed in each case. A few of these are represented diagramatically (Figs. 2-8). From a comparison of the drawing (Fig. 10) of the human stomach with the vagus sketched on it, it appears that incisions in the cardiac portion away from the lesser curvature (Figs. 3-5) divide a negligible number of gastric motor fibers. Such division may alter slightly the configuration of the fundus but probably not decrease the intragastric tension. The posterior branches can probably well make up for the loss of these fibers. Section of the lesser curvature (Fig. 6) seriously impairs vagomotor activity. Annular gastrotomy (Fig. 7) leaves a normally responsive oral stomach and a pyloric portion irresponsive to vagus stimuli. Section of the lesser curvature, as in Figure 8, does not appear to divide important motor nerve branches, but does cripple the contractility as explained above. Figure 11 suggests the comparative values of the stomach contractions following these various incisions and vagus stimulation. Figure 12 is suggestive of the responsiveness of the stomach to stimulation arising in the appendix, gallbladder, duodenum, ureter or anus. It is this type of motility that is believed to be interfered with most by fundal incisions of the lesser curvature, and the emptying contractions that are retarded in the incisions of the pyloric end of the lesser curvature.

4. The vagi appear loosely incorporated in the serous covering of the stomach, which at the lesser curvature is freely separable from the muscularis. From 8 to 10 cm. from the cardia the pyloric nerves enter the stomach wall.

The gastric ulcer patients that are admitted to the Third Division are for the most part taken in on the medical side. Of those directly entering the surgical service, about half are first referred for medical attention before surgical treatment is undertaken. From 1917 to May, 1924, sixty-four patients with chronic gastric ulcer, excluding the malignant, perforated, and duodenal ulcers, were taken in on the surgical wards, and of these, thirty-one were referred for medical care.

Of the thirty-three ulcers of the stomach that were operated on, there were thirteen posterior gastro-enterostomies with twelve improved or cured and one failure; one improved after pyloric occlusion combined with posterior gastro-enterostomy; five improved or cured and one failure after knife excision; one improved after knife excision combined with posterior gastro-enterostomy; three improved or cured after cautery excision; one improved or cured after cautery excision combined with posterior gastro-enterostomy; four after annular gastrectomy; one after jejunostomy; one after a Polya operation, and one death, each, after a Polya resection and a pylorectomy combined with terminal gastroduodenostomy or Billroth I operation. The greater proportion of the ulcers were found at the pylorus, which accounted for the larger proportion of gastro-enterostomies (nineteen out of thirty-three). The local excisions alone were performed on ulcers on the posterior wall or near the cardia; there were nine of these. The annular or sleeve resection has given very satisfactory results to date. It is apparent from experimental observations that annular stricture may follow overtaut sutures in performing the gastrogastrostomy, after the resection in the sleeve operation; but this has never occurred in our experience. That ulcer recurred at the pylorus in two of the four annular resections in this series may be significant of the fact that in all these operations on the human stomach for ulcer we are treating only the local lesion itself, while the disease or the focus of infection, unless removed, is allowed to go on unmolested, in some instances to the production of new ulcer.

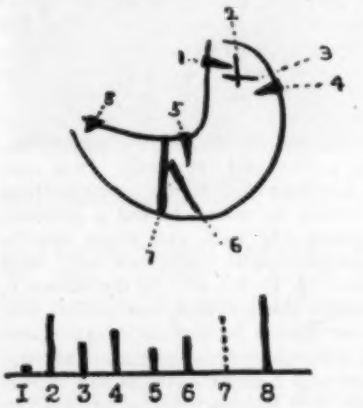

Fig. 11.—Relative vagomotor responses after various gastric incisions.

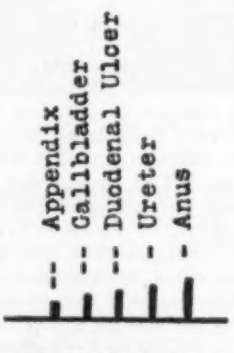

Fig. 12.—Respective responses in stomach contractions to irritation outside the stomach.

CONCLUSIONS

From a study of these clinical and experimental data, the following conclusions are drawn:

1. For ulcers of the lesser curvature of the fundus and cardia, excisions should be planned, whenever possible, that divide the least number of the important gastric branches of the vagus. The division of these nerves impairs the reflex activity of the stomach, while the gastric emptying remains normal in terms of the roentgen ray.

2. For small ulcers of the pyloric portion, local excision may be ample. For medium and large ulcers or for deforming excisions, the circular muscular (spiral) fibers are divided to such an extent, and the emptying power so impaired, that gastro-enterostomy should be carried out. Anastomosis and excision in one or two stages probably are the rule for practically all ulcers of the pyloric end of the stomach.

3. Posterior gastro-enterostomy may be carried out alone for ulcers at the pylorus, but such cases are wisely kept under careful observation, to guard against possible malignant degeneration or new ulceration. In the event of new ulceration at the pylorus, the old gastric stoma may have contracted to such an extent during the ulcer-free interval that it is inadequate as an escape valve for the new ulcer.

4. Mesogastric annular resection leaves a vagus-controlled oral stomach, and an independent, intrinsically active, pyloric portion. The resultant motility in our series has been very satisfactory. The Polya or Billroth I methods, employed in exceptional cases, seem to lessen the chances of recurrence.

ABSTRACT OF DISCUSSION

DR. L. T. LEWALD, New York: Dr. Barber and I have been trying experimentally to work out some of these problems relating to the best type of operation on the stomach and duodendum. It is not an easy problem to work out on the animal, but we have attempted to roentgenograph these animals after feeding them opaque meals, by means of the stomach tube, in order, if possible, to determine the motility. Many times we have tested the animals after operations to find whether there is any reflex spasm. In one of our cases in the human being, the ulcer was associated with gastric retention of a very large amount. With gastro-enterostomy, in addition to excision, the patient did very well. In a case of very deep, large ulcer, so embedded in the pancreas that the surgeon found it impossible to resect, he did a jejunostomy. The patient did remarkably well, and seven months after the operation, the roentgenologist could find very little evidence of the ulcer crater. By giving rest to the stomach, by feeding with a tube through the jejunum, the patient was free from symptoms a year later. In a case of extensive adhesions that had caused hour-glass deformity of the stomach, the operation performed was a gastrogastrostomy, which appeared to be very efficient. We had one case of extensively deformed stomach, due to a penetrating ulcer, with extreme formation of adhesions, resulting in a trifid stomach deformity. There probably had been an acute perforation, as the small intestine part of the ileum at its terminal portion was adherent. The surgeon operated with the idea of doing a gastrogastrostomy, but on account of the extensive adhesions he was not able to do a satisfactory exposure of the two pouches and finally did a gastro-enterostomy. At the necropsy a few days later it was found that he had anastomosed the terminal ileum to the stomach.

DR. W. HOWARD BARBER, New York: I have found experimentally that some of the mesogastric resections are followed by stricture if the sutures are placed too tightly. In clinic practice, these partial gastrectomies have been followed by excellent functional results. Dr. LeWald's last case might have been a good one, were it not for the adhesions, for performing one of the gastric annular resections.

SYPHILITIC SPONDYLITIS*

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AND
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The invasion of the spinal column by syphilitic infection is less frequently encountered than syphilitic lesions in other parts of the osseous system; however, syphilitic spondylitis is now recognized as an occasional complication of syphilitic infection, and should deserve our careful consideration in the differentiation of diseases of the spine.

During the last eight years, at the Cincinnati General Hospital, there have been recorder 111 cases of syphilitic disease of the bones and joints; of these there were only nine patients who presented symptoms of syphilitic spondylitis, and one who suffered from syphilitic disease of the sacro-iliac joint. The regions of the spine involved in the nine cases of spondylitis were: lumbar, five; cervical, three, and lower dorsal, one. Of these, three were in children of 12 years and under, and six were in adults ranging in age from 25 to 64. Three patients were colored, and the remaining six were white.

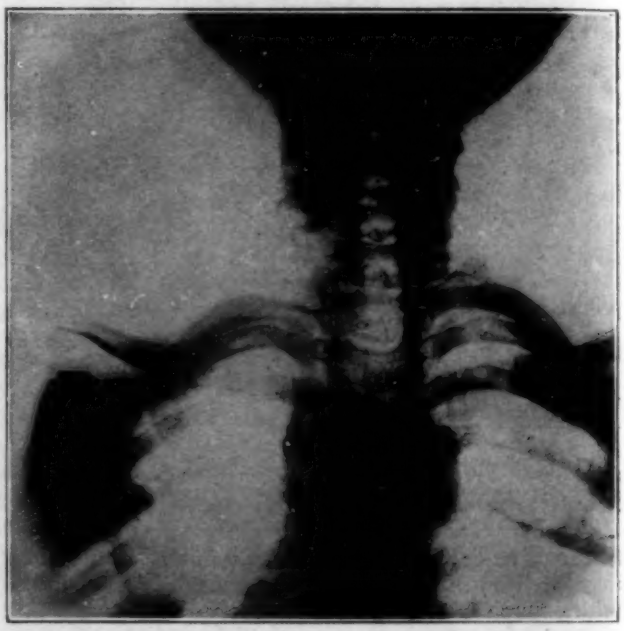

Fig. 1 (R. R., aged 6 years).—Congenital syphilis of the gummatous type involving the fifth, sixth and seventh cervical vertebrae, accompanied by paraplegia. Syphilitic periostitis of the metatarsal bones of one foot aided in making a diagnosis.

Whitney and Baldwin,[1] in a study of 544 cases of syphilis observed at the University of California Hospital, found that eighty-three cases, or 15.2 per cent., presented joint lesions, and of these, forty-one (almost half) showed symptoms of spinal involvement. While this proportion is much greater than that observed by us, it may be that we are overlooking many of the early manifestations of syphilitic spondylitis and that the more advanced cases are being mistaken for tuberculous spondylitis, osteartritis or malignant disease.

* Read before the Section on Orthopedic Surgery, at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Whitney, I. L., and Baldwin, W. I.: Syphilis of the Spine, J. A. M. A. 65: 1989-1994 (Dec. 4) 1915.

Our patients have presented three distinct types of lesions, as characterized by their distinctive symptoms and gross appearance: (1) the arthralgic type, referred to by others as the "rheumatic" or "toxic" type; (2) gummatous disease of the spine, and (3) Charcot's spine.

REPORT OF CASES

CASE 1.—*Arthralgic type.* A man, aged 40, a saw filer, entered the Cincinnati General Hospital, Jan. 29, 1921, because of pain in the back, radiating between the shoulder blades, but more especially in the region of the tenth dorsal vertebra. The pain, which first began about six years before, was aggravated by jolting and jarring, and the patient guarded himself carefully against making a misstep, which might cause pain. There was a history of gonorrhea twenty years before. The family history was negative; the patient had two boys, living and well. The teeth had all been extracted. The glans penis showed some old scars. In the region of the tibia of both legs there were what was thought to be tertiary skin lesions. There was a slight kyphos in the region of the tenth dorsal vertebra, and tenderness on pressure over this region. Flexion of the spine increased the pain and produced muscle spasm in this area. The patient's gait was guarded and careful. The temperature ranged from 98 to 99.5 F., the pulse was from 72 to 100. A blood Wassermann test was negative. A roentgenogram of the spine was negative. The diagnosis was syphilitic spondylitis. Neoarsphenamin and mixed treatment promptly relieved the pain in the back, and cleared up the old skin lesions. While the Wassermann reaction of this patient was negative, the therapeutic test seems to prove the case. The patient was discharged to the outpatient department, Feb. 26, 1921.

The arthralgic type of spondylitis may occur during either the secondary or the tertiary stage of syphilis, and is characterized by an inflammatory reaction in the synovia and periarticular tissues, without destructive lesions of the vertebra; therefore, the roentgenogram is negative in this type. Pain and rigidity in the area involved are often present, but the frequently observed hypotonicity of the ligaments and muscles of the uninvolved portions of the spine is thought by some to be pathognomonic of this type of spondylitis.

CASE 2.—*Gummatous disease of the spine.* A colored man, aged 25, a tile layer, who entered the Cincinnati General Hospital, Jan. 24, 1916, complained chiefly of pain in the neck. The patient's father was living and well; the mother died of heart disease. The patient had always been well until about three years before, when he contracted gonorrhea and possibly had a chancre at about the same time. The present illness began shortly thereafter, with pain and dull aching in the back of the neck, which was not constant at first. The pain was aggravated by jolting and jarring, and usually became worse at night, often causing the patient to be awakened from sleep. Examination showed the cervical spine held in a flexed position, with tenderness and edema about what seemed to be a cervical gibbus. The pupils reacted slowly to light; cervical and inguinal glands were enlarged; the patellar reflex was absent; a Wassermann test was negative. A roentgenogram, Jan. 29, showed gross destruction of the body of the third cervical vertebra. Anterior to this area there was a distinct mass of soft tissue bulging into the pharynx, suggesting a retropharyngeal abscess; this was subsequently opened laterally to the spine, and drained. Early in 1918, the patient experienced weakness and loss of power in the lower extremities, which developed into a complete paraplegia with incontinence of the bladder and bowels. A roentgenogram taken in 1918 showed ankylosis of the cervical spine with some destruction in the upper portion. The patient died, Jan. 30, 1918. The positive findings at necropsy were: ankylosis of the cervical spine, with no gross involvement of the spinal cord; sclerosis and thickening of the mitral, tricuspid and aortic valves; slight chronic nephritis, and slight fibrosis of the spleen.

The gummatous type of spondylitis so closely resembles Pott's disease that it is often a very difficult problem to differentiate the two conditions; they both have a tendency to attack the body of the vertebra with early thinning and disappearance of the intervertebral disk; both are prone to produce cold abscesses and deformity from collapse of the spine due to destruction of the vertebrae. Unfortunately, the roentgenogram is of no great aid in making a differentiation; in the early stage of destruction of the vertebra, new bone formation is not a characteristic feature; and while hypertrophic changes may be present in the more advanced process, this has also been shown to occur occasionally in tuberculous spondylitis.[2] The gummatous type usually occurs during the tertiary stage of syphilis, and since the Wassermann test is notoriously negative during this period of the disease, this reaction cannot always be relied on; furthermore, there is no reason to believe that a patient may not harbor the two infections at the same time, either of which may manifest itself as a destructive lesion in the spine.

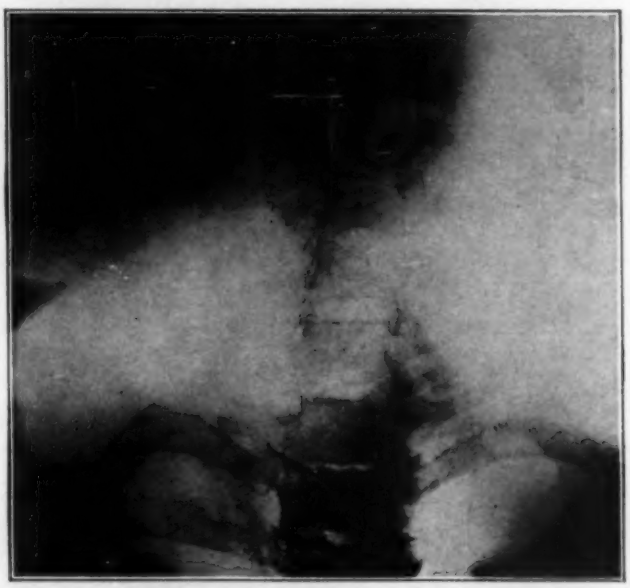

Fig. 2 (J. H.).—Complete ankylosis of the cervical spine due to gummatous disease of this region, followed by paraplegia.

Pain on motion and sensitiveness on pressure over the area involved, as well as the consequent spasm of the muscles, are not so striking in syphilitic spondylitis, and hypermobility of the spine in uninvolved areas is a notable contrast to tuberculosis.

CASE 3.—*Charcot spine.* A man, aged 46, a salesman, who entered the Cincinnati General Hospital, Aug. 6, 1923, complained chiefly of stiffness of the back, and inability to stoop. He stated that he had not had venereal infection, and that his general health had been always good until three years before when he had a "nervous breakdown" and suffered from an inability to use his legs in a normal manner when walking. Seven months before admission, the patient noticed some stiffness of the back, and difficulty in stooping. Four months before, there was noticed a swelling in the left lumbar region, which had never been painful. Examination showed a marked scoliosis with kyphosis in the midlumbar region, which was not painful or sensitive to pressure; the submaxillary and inguinal glands were palpable; the patellar reflexes were absent; Romberg's sign was present; the gait was

2. Cofield, R. B.: Am. J. Orthop. Surg. 4: 332-341 (April) 1922; Bony Bridging in Tuberculosis of the Spine, J. A. M. A. 79: 1391 (Oct. 21) 1922.

ataxic; the temperature was slightly subnormal; the pulse was from 70 to 100; the Wassermann test was strongly positive. A roentgenogram of the lumbar spine showed extensive destruction of bone in all the lumbar vertebrae, with displacement of the second on the third and extensive new bone formation.

This type of spondylitis is not frequently encountered, and, until recently, Charcot's disease of the spine was rarely recognized. Charcot himself did not have a case in his series, and Rotter, in 1817, describing 112 cases of Charcot joints, does not report any one as affecting the spine. In our series of 111 cases of syphilis affecting the osseous system, there are eighteen cases of Charcot joints, and only two cases in which the spine was the seat of the lesion. Its recognition should not be difficult when accompanied by well marked symptoms of locomotor ataxia. There is often marked deformity of the spine, with little or no pain. The deformity disappears to a great extent when the patient lies prone or is suspended, owing to an absence of muscle spasm. The roentgenogram is distinctive, showing irregular destruction of the vetebrae with extensive new bone formation.

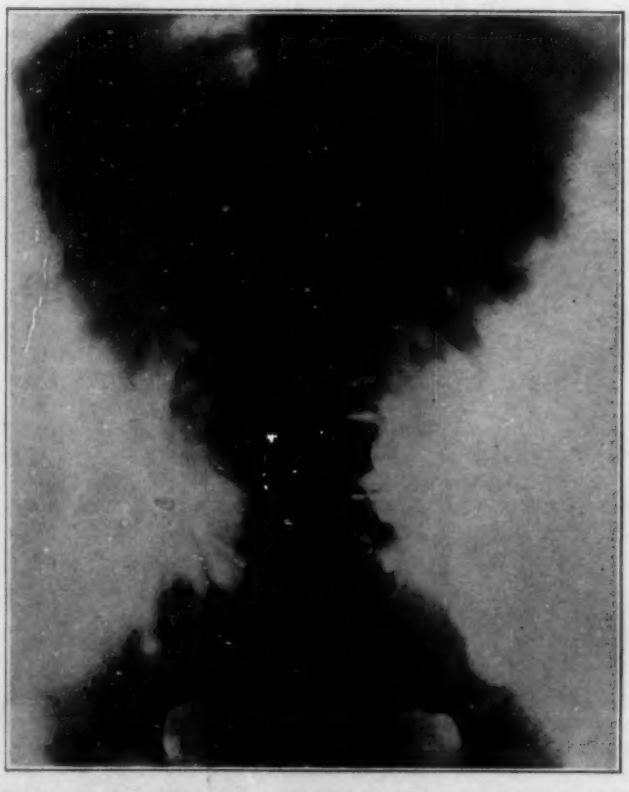

Fig. 3 (E. G.).—Charcot spine: extensive destruction of bone in all the lumbar vertebrae, with displacement of the second and third lumbar vertebrae and extensive new bone formation.

CONCLUSIONS

While syphilitic spondylitis is not as frequently encountered as tuberculosis and ostearthritis of the vertebrae, it should always be considered as a possible etiologic factor in diseases of the spine.

Routine examination of the spine in secondary and tertiary syphilis will probably reveal a much higher proportion of cases of spondylitis of the arthralgic type than have hitherto been observed.

The gummatous type of spondylitis is often very difficult to differentiate from tuberculosis of the spine; the most notable contrasts being less pain on motion, sensitiveness not so marked over the lesion, muscle spasm not striking, especially in the uninvolved areas of the spine, and improvement of the condition following antisyphilitic treatment.

A rapidly developing painless deformity of the spine should always excite our suspicions of a Charcot arthropathy, and lead to further search for symptoms that will substantiate the diagnosis.

ABSTRACT OF DISCUSSION

DR. E. J. BERKHEISER, Chicago: It was very interesting to hear Dr. Cofield's classification of the types of syphilitic spondylitis. In regard to the arthritic type, the diagnosis is not very clear to me. It is true that some types of spondylitis do not improve as they should with ordinary forms of treatment; but if these patients are placed on antisyphilitic therapy along with the orthopedic appliances, a more rapid recovery ensues. Contrary to the general impression that syphilitic spondylitis, or any form of syphilis, is painless, this condition is quite painful. I think that most of these arthritic types occur in the secondary stage of the disease which has been acquired. The gummatous type of syphilitic spondylitis is often confused with tuberculosis. This condition occurs in the tertiary stage of the disease, and most of the cases are to be found in the patient with congenital syphilis. A case of Pott's disease with similar pathologic changes in the joints should be treated as syphilis, recovery will be much more rapid. I do not mean to say that the patient may not have tuberculosis, but it may be superimposed on the congenital syphilis. In regard to the neuropathic arthropathies, or the Charcot spine: In 1922, Ridlon and I published our observation in a series of thirteen cases, ten of which were reported. We found that this condition occurred primarily in the tertiary stage of the acquired disease. It occurred ordinarily at an average age of about 44 years, primarily in men, coming on about eighteen years after the initial lesion. It had an insidious onset, which was exaggerated by trauma in a few cases. The patient had little to complain of, except the deformity and weakness of the back. Examination revealed a rapidly developing deformity, which consisted ordinarily of a kyphosis with a scoliosis, with its lateral rotation deformity, which was due, in a great many of the cases, to a lateral subluxation. There was not the restriction of motion from involuntary muscle spasm that occurs in most diseases. Contrary to that, there was a hypermobility and in one, two or three directions, but restricted in one direction because of the destruction of bone, or the proliferation of bone plaques, or exostoses, so that the restriction was in only one direction. We felt that the treatment of these conditions should be that of stretching out the patient and then maintaining the corrected position. The Wassermann reactions have been mistaken in a great many cases. Cold abscesses do not result, except by a tuberculous complication.

DR. JAMES ARCHER O'REILLY, St. Louis: I agree more or less with Dr. Cofield's classification of syphilitic spondylitis, but it has been my experience that there is hardly any way of classifying syphilis of the bones and joints, and that, of course, includes the spine. I have found that syphilis will simulate almost every type of condition. I think the important point of this paper is that it brings the question of syphilis of the spine to our attention. A great deal has been written about syphilis of the bones and of the spine, in the last few years, but, unfortunately, many members of the profession consider syphilis as a condition that can be easily diagnosed and easily taken care of. The important thing is that we should always think of syphilis in connection with any bone and joint lesion, or any lesion of the spine. The diagnosis of syphilis is not always easy. We should always take a careful history; even then it is easily overlooked. Frequently patients deny syphilis, not because they have any intention of doing it, but they are perfectly honest

in thinking that they have never had syphilis and later, an examination or a Wassermann test will reveal the fact that they have had syphilis. We should always have syphilis in mind in any joint conditions. So-called hypertrophic arthritis and similar types of arthritis may be of syphilitic origin. I have seen a number of cases of that sort. So-called tuberculosis of the spine may be syphilis; the arthralgias may be syphilis; painful backaches may often be caused by syphilis; and unless we have syphilis in mind and constantly examine the patient with that object in view, the condition will frequently be overlooked. If one cannot find syphilis, if the Wassermann test is negative, then the therapeutic test should be resorted to so as to eliminate syphilis. One of the most important points in this paper is that the authors bring out the importance of constantly thinking of syphilis in treating these cases.

DR. KARL G. ZWICK, Cincinnati: The etiologic factor of syphilitic infection in cases of backache is generally overlooked. So generally is syphilis overlooked that Fournier wrote: "Everything which in a child or adolescent affects a bone, with the sole exception of traumatism, is ipso facto scrofula." Inserting the word "tuberculosis" for "scrofula," the statement still applies today. Roberts lately pointed out that chronic articular lesions due to invasion by either tubercle bacilli or *Spirochaeta pallida* produce the same clinical picture. The diagnosis of syphilitic backache requires the ruling out of other etiologic possibilities, especially typhoid spine, metastatic invasion of the spine from malignant tumors, arthritis from focal infection, and tuberculosis. Tuberculosis most frequently gives rise to diagnostic error. In the Foundling Hospital of London, 7 per cent. of supposed cases of tuberculous spondylitis (in a service of seventy) showed positive Wassermann tests and improved with antisyphilitic measures. Warren Thompson states that one writer claims that syphilis is the cause of backache in 50 per cent. of conditions heretofore attributed to tuberculosis. The prognosis in syphilitic spondylitis is good. In all cases of vague symptoms of backache, syphilis should be searched for, calling to our aid all diagnostic aids, including the roentgen ray, spinal fluid examinations and the therapeutic test.

DR. W. K. WEST, Oklahoma City: One point that helped us in the Veterans' Bureau work, where we must have something definite for diagnosis, is making a roentgenogram of the tibia in all cases suspected of being syphilis. I recall two cases with positive Wassermann reaction, saber shin, and a typical syphilitic osteitis of the radius on one side and of the dorsal spine. In this case and in three other cases I have had to change the diagnosis when the patients have been drawing full pay for bone tuberculosis. All have negative Wassermann reactions. All had from two to four times the increase in size of the tibia. I just want to emphasize one point, that in cases in which we must have something definite, it is well to take a picture of the tibia; and in the majority of cases I think we shall find thickening of the cortex.

DR. R. WALLACE BILLINGTON, Nashville, Tenn.: Seven years ago, I reported a case of Charcot spine, which was typical of the cases described by the authors. At that time some urologists were advising the use of mercurialized serum intradurally in the treatment of cerebrospinal syphilis, and we gave this man several doses, four or five, also two doses of neo-arsphenamin. He refused to take any more, but did continue to take mercurials and iodids for several months. This man is still living. The roentgenogram of his spine is interesting. At first he had the characteristics described, marked destruction, proliferation, marked deformity, and kyphoscoliosis. He wore jackets for a few months; since that time he has had a brace to give him a certain amount of spinal support. The whole lumbar spine shows one irregular mass of calcareous substance without any definite outline of the vertebrae; in fact, one can scarcely recognize that it was a picture of a spine. The spine is now rigid, whereas at first it was markedly hypermobile. He is able to go about, but he still has tabes. His general condition now is not so good.

TREATMENT OF NASAL DEFORMITIES

WITH ESPECIAL REFERENCE TO NASAL PROSTHESIS *

V. H. KAZANJIAN, D.M.D., M.D.
BOSTON

In the study of nasal deformities, we see many deviations from the normal. We might classify these in two groups: first, simple deformities representing instances of varied degrees of distortion without loss of tissue, and, second, gross deformities, in which we find destruction of a part or of the entire nose due to disease or injury. In this paper I will discuss the second group; i. e., gross deformities of the nose.

CAUSES

The destructive effects of disease are seen quite commonly in everyday practice. In the order of frequency, epithelioma of the nose comes first to our attention (Fig. 1 *A*). The stubborn and destructive nature of this disease is familiar to all of us. It is unfortunately true that our present and only positive means of combating carcinoma is based on treatment that causes a still greater destruction of tissue, with resulting deformity, which is so unsightly in appearance and so distressing to the patient. The loss of tissue may involve the lateral half, the tip, or the entire nose. Occasionally the destruction extends beyond the boundaries of the nose to the face. For example:

A B

Fig. 1.—*A*, destruction of anterior part of nose; *B*, artificial nose of vulcanite rubber, retained in position by its close contact with the remaining part of the nose and by spectacles.

Last year a patient aged 62 came to the Harvard Dental School Clinic for facial prosthesis. He had lost the entire upper half of the face, including both eyes, the nose, the upper lip, and the maxillary and nasal bones. The disease had started in 1909, and, in spite of repeated operations and radiation, continued active in the left orbital region at the time the patient attended the clinic in November, 1923.

Occasionally, considerable destruction of the nasal tissue, especially at the lower region, is caused by lupus vulgaris. It rarely involves the entire nose, yet there is usually seen a considerable amount of cicatricial tissue

* Read before the Section on Stomatology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

surrounding the lesion, a condition that is annoying to the plastic surgeon in his attempts for reconstruction. A unique, but at the same time tragic, case of lupus vulgaris came to my attention recently:

A woman, aged 55, had a small ulcerating lesion on the side of the nose. This gradually spread over the face, and within four years involved the entire face from the hairline to the neck. At the end of that time, about two years ago, the patient was successfully treated, and she has recently come to me for prosthetic restoration of the nose.

Fig. 2.—Grooves at lateral aspect of artificial nose, and two extensions into nasal cavity.

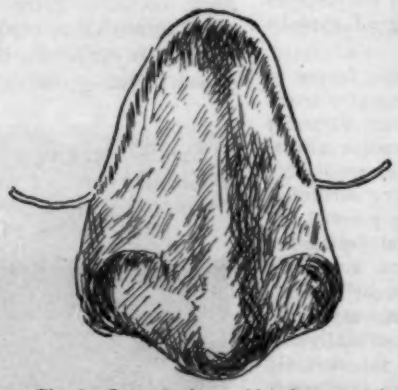

Fig. 3.—Lateral wires, which fit accurately to the inside of the frame of the spectacles, thus exerting pressure at middle of appliance.

Fortunately, with the advance of the diagnosis and treatment of syphilis, the stages of destruction are somewhat reduced. This, of course, tends to minimize the deformities of the nose. Occasionally, however, we meet a condition in which the nose has collapsed as a result of the loss of cartilaginous tissue, and the destruction, at times, extends to the external surface, involving the alae of the nose, which presents a picture similar to that of lupus vulgaris.

Destruction of the nose by acute infections following osteomyelitis is rare. However, the following case is strongly suggestive of this disease as the cause of the deformity:

A woman, aged 20, attended the Harvard Dental School Clinic for treatment of deformity of the face. At the age of 2, she pushed a small button into her nose, which was not noticed by her parents at the time. Two years later, owing to intranasal disturbances, the button was removed by the child's grandmother with the aid of a hairpin. This operation was followed by virulent infection, which resulted in the destruction of the nasal bones, the septum and the turbinates, the anterior part of the upper jaw, columna, and soft tissues of the base of the nose. On examination, the nasal cavity was found to be one large chamber into which the nose had seemingly dropped; the upper lip was depressed toward the buccal cavity and was adherent to the palate. This patient is at present under treatment for rhinoplasty.

During the World War, the number of cases of gunshot wounds of the face and jaws was considerable, and varying degrees of mutilation of the nose were not uncommon.

Such injuries were often accompanied by destruction of the surrounding tissue, which at times involved the eyes, the lips, the cheeks or other parts of the face. Plastic surgery, as well as prosthesis of the nose, made great advances in this period, and our present methods of treatment of such injuries owe a great deal to the experiences of that period.

TREATMENT

For the treatment of such deformities, we must resort to either surgery or prosthesis and, in some instances, combinations of the two. Although the two methods have been developed independent of each other, one by surgeons, the other by dentists, we must not consider them as separate schools discussing the relative merits of one against the other. Rather must we consider that we have two sources from which we hope to secure help for the unfortunate patient, the relative merit of each being dependent on the circumstances and peculiarities of each individual case.

Rhinoplasty has made great advances in the last ten years. We have numerous examples of nasal restoration done by surgery which were formerly considered impracticable. With the realization of this fact, we are also forced to admit that in some of the types of deformities under discussion surgery has its limitations. The limitations are not so much due to lack of adequate surgical technic as to other factors over which we have no control, such as: (1) the physical condition of the patient; (2) peculiarities of the disease which caused the deformity, and (3) the refusal of the patient to undergo surgical treatment.

Extensive reconstruction of the nose often requires a series of operations. The patients undergoing such operations must have a fair degree of health and vitality. Most patients having gross nasal deformities are past middle age and are weakened by the disease that caused the deformity. Moreover, in cases of carcinoma, besides the factor of age, we are dealing with a disease that is treacherous and progressive by nature. Indeed, it is not uncommon to see beautifully performed plastic operations end in disaster by the reappearance of the disease.

Fig. 4.—Extensions to floor of nose and toward frontal region.

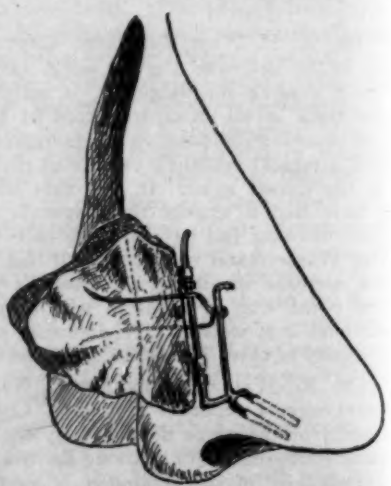

Fig. 5.—Artificial nose having two perpendicular, accurately fitting gold plates with delicately built hinges and springs to prevent undue pressure to either side of the septum.

Therefore, while appreciating the great possibilities of surgery, one is forced to consider the age, the physical condition of the patient, and the peculiarities of the disease, and we are compelled to choose prosthesis as a means for the correction of many nasal and facial

deformities, realizing the fact that, while artificial restorations have great possibilities, from the point of view of cosmetics, they are, after all, artificial and "false," and carry with them an element of repulsion.

The development of nasal prosthesis is closely linked with the dental profession. This is possibly due to the fact that the dentist, being familiar with the manipulation of various materials in the construction of artificial dentures, perceived the idea of applying it to nasal prosthesis. The works of Kingsley, Claude Martin and others in the development of surgical prosthesis are classic.

The methods most generally used in the construction of prosthetic noses can be most conveniently described under the following headings:

1. Plaster reproduction of the face and modeling of the nose.
2. Materials used for the reproduction of prosthetic noses.
3. Methods of retention.
4. Coloring and camouflaging.

A plaster reproduction of the face is necessary for use as a working model.

Fig. 6.—Diagram of a prosthetic nose held in position by artificial denture with aid of square wire and tube attachment. This is made possible by a large perforation extending from the mouth to the nose.

The modeling of the nose is done on the cast with modeling clay or wax. In this procedure, some knowledge of sculpturing is essential. To shape a nose to harmonize with the facial contour and individual type is an artistic achievement; a poorly modeled prosthetic nose is unnecessarily conspicuous. For this shaping it is often necessary to have the services of an artist. One receives much assistance from former photographs of the patient and also by studying the noses of the immediate relatives who have a family resemblance.

MATERIALS

Various materials have been used in the past for prosthetic noses, such as porcelain, celluloid, copper, silver, aluminum, vulcanite rubber and various gelatin compositions.

We may from experience discard several of these materials as being less desirable, and discuss only (*a*) vulcanite rubber, (*b*) copper and (*c*) gelatin compounds as the most useful materials at our disposal at present.

Vulcanite rubber has several advantages over the other materials mentioned. First, it is light, being even lighter than aluminum. Second, it is easily manipulated into a desired shape, and modification of its shape is easily done even after work is completed. One drawback in the use of this material, however, is that since it is an opaque substance it is difficult to apply the various tints necessary to get a good flesh color. This disadvantage is somewhat offset by the use of certain celluloid paints, which I shall discuss in more detail later.

In 1916, the use of copper was advocated by a British artist, Mr. F. D. Wood. This was used in the form of electrodeposits for the construction of nasal and facial prosthetic parts. This method was later adopted by Mrs. Maynard Ladd and others doing reconstruction work among the French soldiers in Paris.

The advantages of the nose made of copper deposits are: (*a*) It duplicates the modeled nose to its minutest detail; (*b*) it is light, thin and strong, and (*c*) the parts can be soldered for the purpose of retention.

This material is also opaque and, therefore, its use has the same handicap as vulcanite rubber in that respect. In addition, it requires an expert electroplater to make the necessary apparatus and acid baths for the purpose of depositing the copper on the model evenly and smoothly.

In 1915, Dr. Pont of Lyons, France, introduced a new method which promised to be far superior to other methods in its artistic effect. He used gelatin, to which was added enough glycerin, kaolin and petrolatum to make a fluid when heated.[1] This is heated in a double boiler and poured into a mold; it is sufficiently tough to hold its shape, and at the same time it is quite flexible, resembling the natural nose. The nose is retained in position by being pasted on the face every morning. The life of a gelatin nose is not more than one week, since by that time the delicate sharp margins begin to curl up and also the color changes. To offset this objection, the mold of the nose and the formula are given to the patient with instructions as to how additional ones can be made when needed.

From an artistic point of view, when gelatin is incorporated with the necessary dyes for the purpose of imitating the color of the skin, the result is excellent. The translucence and porosity of the gelatin are distinctly superior to other materials.

METHODS OF RETENTION

The retention of a prosthetic nose may be accomplished by: (1) the use of spectacles; (2) adhesion by contact with nasal and facial tissues on which it rests; (3) extensions into the nasal cavities; (4) various devices from the oral cavity to the nose, and (5) adhesive glues.

Fig. 7.—A square wire 0.5 mm. in diameter is attached to the anterior part of the dental plate. The upper section of this diagram shows this wire projecting along the inner aspect of the upper lip to the base of the nose. A square tube fastened to the inner aspect of the artificial nose fits over this projecting wire, thus holding the appliance in position.

Successful wearing of a prosthetic nose is very important for the comfort of the patient and for general appearance. Slight dislodgment will invariably disturb the fit of the appliance to the tissues and cause conspicuous spaces.

1. Gelatin, 50 gm.; glycerin, 150 c.c.; kaolin, 25 gm.; water, 150 c.c.; petrolatum, 5 gm. The gelatin, which has soaked in water for an hour, is slowly melted in a hot water bath. Then the glycerin and the kaolin are mixed with it, having been first macerated in a mortar. The lot is then decanted and left to cool down.

Among the mechanical problems encountered, none is more difficult to overcome than the problem of retention. Therefore, in a given case, one must try to utilize all available means of anchorage. To begin with, the inner surface of the prosthetic nose must fit the tissues accurately and be in constant contact with all the available tissue under its base. Thus we establish stability, and utilize the principle of adhesion so well illustrated in the retention of full dentures (Fig. 1 *B*).

The use of spectacles for retention is one of the oldest and commonest methods. Usually, the spectacles are fastened to the bridge of the nose so that the entire weight of the appliance is held by the ears through the lateral arms of the spectacles. This method has many mechanical weaknesses unless it is assisted by other means. First of all it lacks stability, because the spectacles cannot be made secure enough to the ear to get the desired effect. Secondly, with the glasses attached to the bridge of the nose, pressure will tend to dislodge the lower border. To offset this objection, I devised a method which focused the pressure at the middle of the nose at its lateral aspects (Fig. 2). For this purpose, heavy tortoise-shell glasses are used. The lower curvature on each side as well as the bridge fits the nose accurately, the greatest contact being at the lowest point. If necessary, two fine wires may extend from the sides of the nose to meet behind the lowest point of the spectacles on each side (Fig. 3). These wires are hidden by the heavy frame and are not conspicuous. The spectacles are not fastened to the prosthetic nose. Because of their accurate fit to the nose, it maintains the correct position when adjusted.

Spectacles, no matter how accurately adjusted, will not prevent the appliance from slanting downward, a feature that is very annoying to the patient. In this respect, projections to the nasal cavity form an essential auxiliary point of retention. In order to utilize this principle with success, we must consider the anatomy and structural peculiarities of the nasal cavity. Nasal mucous membrane is a very delicate and sensitive structure. It does not tolerate the interference of appliances unless the appliance fits accurately and covers considerable area (Fig. 2).

Extension to the floor of the vestibules is the most practical location, although occasionally one is able to extend parts toward the frontal region (Fig. 4) and to a perforation of the septum if there is one. In one instance, I tried to utilize the septum by extending two accurately fitting gold plates, with delicately built hinges and springs to prevent undue pressure, to each side of the septum, but this was only partially successful (Fig. 5).

Whenever possible, a prosthetic nose could be anchored to a dental plate or bridge; this method affords the greatest amount of security. If there exists a palatal or buccal perforation caused by disease or trauma, the problem is simple. A suitable attachment can be projected to the nasal cavity to which the prosthetic nose can be fastened (Figs. 6 and 7).

Fig. 8.—The projectile entered on the left side of the face near the lobe of the ear and made exit through the right side of the upper lip, destroying the greater part of the palate, septum and upper lip, and lacerating both the alae of the nose and the remainder of the upper lip. The nasal bones were comminuted, leaving the nose perfectly flat on the face.

Fig. 9.—Patient prior to plastic operation for the reconstruction of the upper lip. Artificial appliance (Fig. 11) acts as a substitute for the missing palate and also supports the anterior part of the nose.

Fig. 10.—Appearance of patient illustrated in Figure 9 after reconstruction of the lip.

Even when no perforation exists, I have in several instances operated and made a perforation at the inner aspect of the upper lip sufficiently large to pass a wire 2 mm. in diameter. Through this aperture, the necessary retention for the prosthetic nose was gained.

COLORING

Coloring the prosthetic nose to harmonize with the color and texture of the patient's entire face is the work of a trained artist. For this purpose, ordinarily various oil paints are used. Mrs. Maynard Ladd, in her reconstruction work, has used celluloid paint. I also have adopted this material in my prosthetic work in preference to oil paints. The advantage of this material is that it is more lasting and does not disintegrate by continued rubbing and washing.

The manipulation of this paint is a little more difficult than the ordinary paints, yet after a little practice one is able to master its use. For noses made with celluloid composition, coloring matter is incorporated with the ingredients. Usually gumlac madder dissolved

to saturation in mineral essence and yellow ochre in suspension are used.

COMBINATION OF SURGERY AND PROSTHESIS

Claude Martin,[2] describes a number of methods in which he has used prosthetic means as a skeleton to form the bridge of the nose. Two groups are employed: viz., internal and external.

Internal.—In this group, the prosthetic part is buried in the tissues and has no communication with the outside air. For this purpose vulcanite rubber, celluloid, gold, platinum or ivory is used, but experience has shown that the tissues will not tolerate these foreign bodies, and sooner or later failure will result. Moreover, we know that live bone and cartilage are the better materials for reforming the bridge of a nose. Therefore, internal prosthesis has no place in nasal reconstruction.

External.—External prosthesis is applied to those cases in which the appliance remains in communication with the outside air, is adjustable, and is made to support the tissues by direct contact. There is a limited use for this method in certain suitable cases. The cases most suitable for the adaption of this method are those in which the anterior part of the palate is missing, as well as the cartilagenous support of the nose. Mechanically, it is quite simple to make extensions to the maxillary side of the artificial denture to conform to the inner aspect of the nose and hold the tip in position. The following cases are illustrative of this treatment:

A private received a gunshot wound of the face which caused destruction of the greater part of the palate, septum and upper lip, lacerating and flattening the anterior part of the nose. After various plastic operations for reforming the lip and nose, an artificial upper denture was made to supply

Fig. 11.—Appliance designed to supply the missing teeth and palate in Figures 8 and 9. The upper denture is made in two parts in order to facilitate adjustment. The anterior projecting part fits accurately under the tip of the nose, acting as a support. The lower plate has two springs, one each side, designed to hold the upper denture in position.

the missing teeth and palate, as well as to support and give the necessary contour to the upper lip. In order to hold the flattened nose in position, an extension was made from the maxillary side of the denture to conform with the inner aspect of the nose (Figs. 8, 9, 10 and 11).

A lieutenant received a gunshot wound of the face which was, in a lesser degree, quite similar to the foregoing case, though the anterior part of the palate was partly destroyed and was in communication with the nasal cavity. Moreover, the right side of the alae of the nose was partly destroyed and adherent to the lip, pulling the tip of the nose downward considerably. The patient was first treated at the time of the injury in France and came to me in America in 1921. Plastic operations were performed to elevate the bridge of the nose and to reform the alae, but in spite of these efforts the tip lacked the necessary support, owing to destruction of the cartilage and the maxillary bones. An opening was made from the oral cavity to the right nostril, and into this a saddle of sufficient length to support the tip of the nose upward was inserted to the artificial denture (Fig. 12).

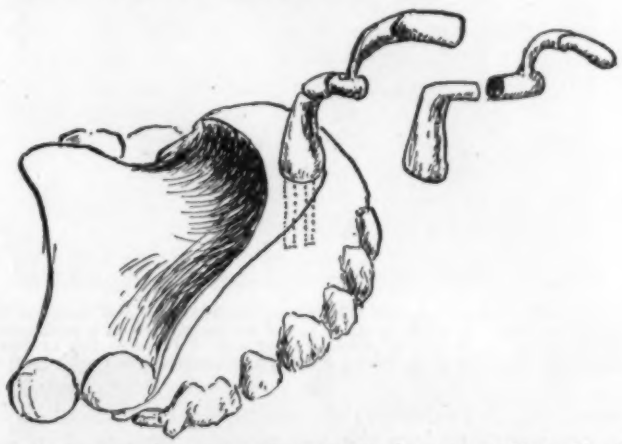

Fig. 12.—Use of a small saddle projecting from the maxillary side of the dental plate to elevate the tip of the nose.

Modifications of these appliances might be used as temporary measures in rhinoplasty or in skin grafting within the nasal cavity.

224 Commonwealth Avenue.

2. Martin, Claude: Prothèse immédiate.

REPAIR OF ACQUIRED DEFECTS OF THE FACE *

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Plastic surgery of the face has been the object of a great deal of attention during the last few years, chiefly as a result of numerous war injuries of this region. Indeed, among the laity, it is popularly believed that the art is something entirely new, brought out by the world war. It might be of interest to examine the present state of development of this branch of surgery, to survey the efforts of some of the past workers, and to note in what respects progress has been made in recent years. Examination of the literature reveals that from the time of the Italian Tagliacozzi, in the latter half of the sixteenth century, until 1816, when Carpue, in England, published his work on the Indian method of rhinoplasty, reconstructive surgery of the face received very little attention. Rigaud [1] credits Carpue with resurrecting the art, which almost immediately made enormous strides in Europe. As a matter of fact, nearly all the principles in common use at the present time were practiced by these pioneers of 100 years ago. Their achievements are the more remarkable in view of the fact that neither surgical anesthesia nor the principles of asepsis were known to them. The works of Dieffenbach, Delpech, Morgan, Graefe, Blandin, Roux, Lisfranc, Zeis, Jobert, Rigaud, Serre, Blasius and other

* Read before the Section on Stomatology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Rigaud, P.: L'anaplastie, Paris, 1841.

surgeons of the first part of the nineteenth century can be profitably studied by every one interested in this subject. These men thoroughly understood the problems of blood supply in relation to the nutrition of sliding and pedicled flaps. The development of free tissue transplantation—skin, fat, cartilage and bone—did not occur until the second half of the nineteenth century.

One of the most important principles to be recognized in the repair of facial deformities is that in defects

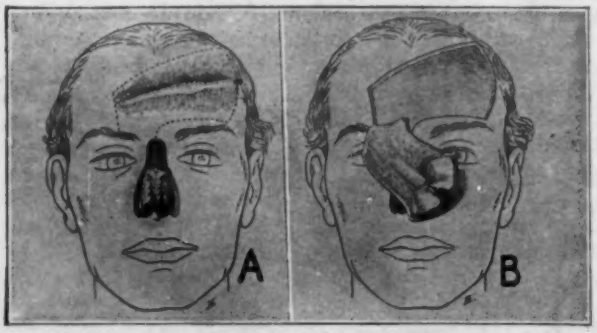

Fig. 1.—Nélaton's method of outlining forehead flap and insertion of costal cartilage: *A*, costal cartilage placed horizontally beneath periosteum of forehead; *B*, method of folding distal end of forehead flap to form columella and linea alae. (From Nélaton and Ombrédanne.)

involving full thickness of the lip, cheek, nose, etc., it is necessary to replace the lost mucous membrane lining as well as the skin covering. This fact was recognized by Delpech in 1823,[2] when he attempted to replace the mucous lining of the lower lip by doubling over the end of a pedicled skin flap from the neck. Serre,[3] in 1834, lined these lip and cheek flaps with mucous membrane from adjacent parts of the mouth. A distinct improvement was brought out by Schulten,[4] who, in 1894, described the use of a band of mucous membrane from the upper lip attached to its original site at each end and brought down to cover the inner surface of the lower lip. Another very satisfactory way of lining a defect is to turn over a flap of skin with a hingelike pedicle at one of the edges of the opening so that the skin faces into the mouth. Then a second pedicled skin flap is used to cover the raw surface. The first published record of this method that can be found is by Kraske,[5] in 1888. It has been found most satisfactory in my hands when the skin surrounding the opening is healthy and free from hair. In utilizing a pedicled flap with the end doubled over to form both lining and covering, Czerny,[6] in 1889, pointed out the advantage of doing this in two stages. The first stage consists in raising the end of the flap and folding it under. Then, after the opposing raw surfaces have healed together, the reflected edge is divided so that the flap will present raw edges all around to suture into the defect.

During recent years, special efforts have been successfully directed to the development of procedure that will permit the use of longer and larger flaps from a greater distance. Of these, the most important are: delayed transfer of the flap; tubing the pedicle, and the use of a double-pedicled flap. The delayed transfer method, advocated by Blair[7] in 1921, consists in completely raising the flap and then immediately suturing it back into its original bed, the transfer to the new position being delayed for a period varying from six days to two weeks. This permits the use of a longer, narrower and thinner flap than by immediate transfer. If the flap will not survive, it is an advantage to have the slough occur before transfer rather than after placing it in its new position.

The tubed pedicle method consists in preparing the pedicle by making two parallel incisions from 2 to 3 inches apart, raising the skin between them, closing the defect underneath by bringing the edges together after undermining, and then suturing together the parallel edges of the pedicle so that the latter resembles in form a tube, with the skin surface outward. By this procedure, the flap gradually gains its main blood supply through the pedicle, and a much larger flap from a greater distance can be safely utilized. As there is practically no raw granulating surface exposed, the wound as a rule remains much cleaner than in cases in which the ordinary pedicle is employed. After a period of from ten days to three weeks, a flap at the distal end of the pedicle can be raised and transferred to the defect to be filled. The tubed pedicle method is usually ascribed to Gillies[8] of London, who first used it in 1917, and described it in 1920. It is of interest to note, however, that, in an article last year, Filatoff[9] of Odessa says that he conceived this method and employed it in a case in 1916, one year before Gillies, publishing the report[10] in a Russian ophthalmologic journal in 1917. He has only recently had access to the later English literature, and expresses interest that some one else independently thought of the same procedure.

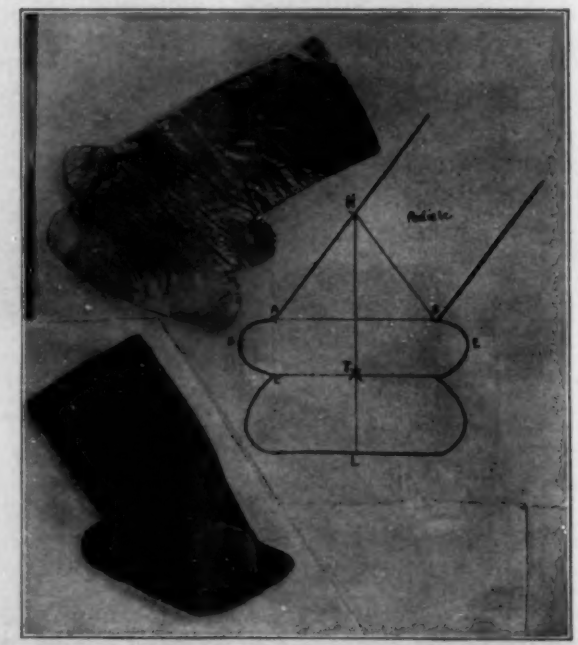

Fig. 2.—Plan of forehead flap, based on clay model of nose to be fashioned at right, measurements plotted on paper; *NT*, nasion to tip, 50 mm.; *TL*, tip of nose to lip, 25 mm.; *BE*, greatest width between alae, 70 mm.; *AD*, width between tips of alae, 52 mm.; *NA*, nasion to top of ala, 42 mm.; *NB*, nasion to widest point of ala, 52 mm.; *AC*, height of ala, 18 mm.; at left, above, pattern reproduced in tin-foil; below, Blair's method of folding distal end of forehead flap to form columella and lining of alae.

The use of two pedicles will permit the raising of a larger flap than leaving it attached at only one end. This method consists in raising an area of tissue, leaving

2. Delpech: Rév. méd. franç. **2**: 183, 1824.
3. Serre, M.: Traité de l'art de restaurer les difformités de la face, 1842.
4. Schulten: Deutsch. Ztschr. f. Chir. **39**: 97, 1894.
5. Kraske: Naturforscherversammlung, 1888.
6. Czerny, V.: Beitr. z. klin. Chir. **4**: 621, 1889.
7. Blair, V. P.: Surg., Gynec. & Obst. **33**: 261 (Sept.) 1921.
8. Gillies, H. D.: Plastic Surgery of the Face, London, 1920.
9. Filatoff: Presse méd. **31**: 1061, 1923.
10. Filatoff: Wiestnik oftalmol., April-May, 1917.

it attached to its original site by a pedicle at each end and sliding it up or down to the part to be supplied with new skin. The idea was originally published by Morgan [11] of London, in 1828 in describing a case of restoration of the lower lip destroyed by carcinoma, by a flap from the chin and submental region. Similar

Fig. 3.—Appearance of patient, before operation, with basal cell epithelioma of nose, requiring excision of tip, both alae, columella, cartilaginous septum, and soft tissue of dorsum.

neck flaps have frequently been used by others since, for reforming the lips. In 1920, Dufourmentel [12] of Paris described the use of a double-pedicled flap from across the scalp, attached to the temporal region at each end, brought down like the chin strap of a hat, to restore the lower lip and chin. He performed his first operation in October, 1918, and states that as far as he knows he is the originator of the method. In the German literature the first mention of the use of a double-pedicled scalp flap for reconstruction of the chin is in an article by von Eiselsberg and Pichler [13] in 1923, three years after Dufourmentel. These authors state that their first operation by this method was performed in November, 1917, which is one year before Dufourmentel. Gillies,[8] however, appears to have antedated both the French and the Germans, for in his book, published in 1920, he describes reconstruction of the chin by a double-pedicled scalp flap performed Sept. 20, 1917, two months before the German report. It is probable that this most excellent means of chin restoration was independently conceived by several workers in different countries about the same time.

In rhinoplasty, efforts have been directed toward providing a semblance to a nose rather than a shapeless lump of flesh, toward avoidance of shrinkage by furnishing a lining, maintenance of airway through the nostrils, and affording proper support. In a paper of this scope it is possible to mention only a few of the important steps that have led to the present state of development.[14] The earliest writers advised the cutting of flaps from patterns to insure greater accuracy in size and shape, Graefe employing wax and plaster models also. At first, in the original Indian and Italian methods, no attempt was made to restore the lost lining of the nose, a simple flap of skin with raw surface facing the interior forming a covering for the opening. According to Dubowitsky,[15] Labat, in 1833, was the first to attempt to get a better shape to the nostrils by so cutting a pedicled forehead flap that its distal end could be folded over on itself to form a columella and alae lined with skin. Lining the nose with separate flaps of skin dates from Dieffenbach [16] in 1833. He slid under the skin of a saddle nose a frontal flap with skin facing inward. Dieffenbach did this, however, merely to give greater prominence to the bridge. Verneuil [17] first applied this principle in total rhinoplasty in 1862. Keegan [18] provided lining for the lower part of the new nose by dissecting two cutaneous flaps from the surface of the nasal bones and turning them downward, hinge-like, just at the lower border of the bony bridge. He then formed the covering of the dorsum, alae and columella by a forehead flap with its pedicle at the inner third of the eyebrow. The inversion of skin flaps is still found to be a very serviceable method of lining the upper part of the nasal defect, but the lining for the alae and columella is best formed by folding in the distal end of the forehead flap.

Von Mangold [19] was the first to employ an autogenous cartilage graft for repairing a defect. Oct. 5, 1897, he

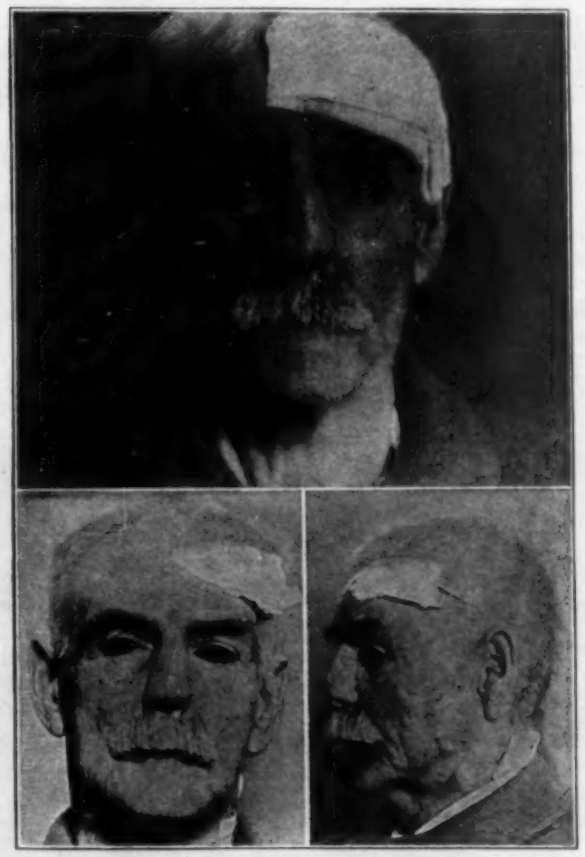

Fig. 4.—Stages of operation, by Blair's method: above, delayed transfer of forehead flap; below at left, after division of pedicle; at right profile view, after operation.

employed a piece of costal cartilage to close an opening in the larynx. June 21, 1899, the same surgeon inserted a piece of costal cartilage under the skin of a saddle nose through a curved incision at the glabella.

11. Morgan: Lancet **2**: 537, 1828-1829.
12. Dufourmentel: J. de chir. **16**: 171, 1920.
13. Von Eiselsberg and Pichler: Arch. f. klin. Chir. **122**: 337, 1923.
14. For details of the literature, readers are referred to the excellent work on rhinoplasty by Nélaton and Ombrédanne, published in Paris in 1904.
15. Dubowitsky: Gaz. méd. de Paris, 1835, p. 748.
16. Dieffenbach: Operative Chirurgie **1**: 359, 1833.
17. Verneuil: Bull. Soc. de chir. de Paris, 1862, p. 70.
18. Keegan: Rhinoplastic Operations, London, 1900.
19. Von Mangold: Verhandl. d. Gesellsch. f. Chir. Berlin **29**: 460, 1900.

Charles Nélaton,[20] in 1902, for the first time employed costal cartilage as a support for flaps in total rhinoplasty. He measured the length of the nose desired with a compass and marked out the dimensions of the forehead flap on the skin with a silver nitrate pencil. The shape of the flap was arrived at by dissecting the skin off the nose of a cadaver and spreading it out flat. A piece of the eighth costal cartilage was notched near its end so that it

Fig. 5.—Dieffenbach's operation for formation of columella from upper lip. (Nélaton and Ombrédanne.)

could be bent later to support the columella. The cartilage was inserted horizontally in a tunnel beneath the periosteum of the forehead (Fig. 1 *A*). Two months later, the forehead flap containing the cartilage was raised, the distal end folded around the tip of the costal cartilage to form the columella, and its sides folded over to line the alae with skin (Fig. 1 *B*). The flap was then sutured down into the freshened edges of the defect, to form the new nose. From the illustrations of some of Nélaton's cases, his results were better than any before obtained, but still left much to be desired in thickness of nostrils and columella, and tendency to get the new nose too large.

The most important advance made since Nélaton's time is seen in the technic followed by Blair, not as yet published by him, and by whose permission it is mentioned here. Very careful attention to the details of each of the following steps is essential for the best results:

1. A plaster-of-Paris impression of the patient's face is taken, and a cast made in the same material.

Fig. 6.—Formation of columella from upper lip by Dieffenbach's method: *A*, loss of columella; *B*, after operation.

2. The defective nose is built up on the cast to the desired form in wax or clay.

3. The dimensions of the nose on the cast are measured and plotted out on paper, allowances being made for columella and lining of nostrils. The following distances are measured: (*a*) nasion to tip of nose; (*b*) tip of nose to lip; (*c*) greatest width between the alae; (*d*) width between tops of alae; (*e*) nasion to top of ala on each side; (*f*) nasion to widest part of ala on each side; (*g*) height of ala. The portion representing the columella and lining is bounded below by a straight line passing horizontally across the end of the nasion-lip line and curving up at each end to the lowest point of the ala. The pedicle of the flap is bounded by two parallel lines, one side an upward prolongation of the line from the nasion to the top of the ala, and the other a line from the top of the ala. Reference to Figure 2 will make these details clear.

4. The paper plan is reproduced in heavy tin-foil.

5. First Operation: The previously sterilized tin-foil pattern is applied to the patient's forehead, with the pedicle portion slanting up from the inner third of one eyebrow toward the opposite side of the forehead so that the main portion of the pattern lies horizontally. It is carefully placed, so that when the flap is raised and rotated downward 90 degrees it will come into proper position to form the new nose. The forehead flap is now outlined, and raised throughout its extent, being left attached by the end of the pedicle at the eyebrow. All bleeding is controlled, and the flap sutured back into its original bed for delayed transfer. This delayed transfer allows the cutting of the flap, particularly at its distal end, to include only the skin, so that, when it is folded over,

Fig. 7.—Destruction of septum and columella, shrinkage of alae, saddle nose, external fistula, before operation.

the alae and columella will not be too thick. At the same operation, the margins around the nasal defect should be outlined by an incision down to the bone to cause a scar line, which will fix these margins and prevent them from spreading laterally when freshened later. If allowed to spread, the new nose will flatten out. At this stage also, if desired, any skin flaps that are to be turned in to line the upper part of the nasal defect can be raised and sutured back for delayed transfer.

6. Second Operation: Two weeks later, all soft tissue remnants of the original nose are removed, including parts of the alae, etc., within the area covered by the measurements for the new flap. If skin flaps have been previously outlined to line the upper part of the defect, they are now raised, inverted, and sutured into place with catgut. The forehead flap is then raised, and the distal end folded in the middle to form the columella, the lateral portions being turned in to form lining for the alae (Fig. 2). This folded portion is secured by catgut sutures. The flap is now rotated 90 degrees downward on its pedicle and securely sutured into the nasal defect. It is particularly important that the columella be securely fastened at its posterior end to the previously freshened and undermined middle of the edge of the upper lip. The alae are attached on each side to the raw edges of the defect, and the side of the flap not continuous with the side of the pedicle is then sutured from the top of the ala to the nasion. If

20. Nélaton and Ombrédanne: La rhinoplastie, Paris, 1904.

desirable, to remove oozing blood beneath the flap a rubber tissue drain may be placed beneath the pedicle and small rubber tubes inverted in the nostrils. These drains should be removed after twenty-four or forty-eight hours. If these details have been carefully carried out, it will be found that the tip of the nose stands out prominently, and the alae will be well formed, with patent nostrils. The double thickness of the skin will provide sufficient rigidity so as to require no additional support. The forehead defect can either be immediately covered by a full-thickness skin graft from the abdomen, or can be partially obliterated by undermining, and approaching its edges with sutures and later completely covered by a Thiersch graft.

Fig. 8.—Result of "patchwork" operations, with preservation of original alae; forehead flap, costal cartilage transplant.

7. Third Operation: From two to four weeks later, under local anesthesia, the pedicle is divided along the line from the nasion to the top of the ala and returned to the forehead. The raw edge of the flap is sutured to the side of the defect (Fig. 4).

In most cases, even of total destruction of the nose, this soft tissue flap alone will restore the natural prominence, although the new nose may be freely movable. If additional stability is desired, a piece of costal cartilage can be inserted later beneath the skin of the dorsum.

To obtain a forehead flap of sufficient size may require slight encroachment at the distal end into the hairy scalp. This is not ordinarily a serious objection, because the hair-bearing portion of the flap will be turned in to form the lining of the alae where hairs are found under normal conditions. The principal untoward development is detachment of the columella from its junction with the upper lip, and consequent shrinkage. In this case, it will become necessary to make a new columella from additional tissue. Here the old procedure of Dieffenbach,[21] in 1829, stands us in good stead. This consists in making two vertical parallel incisions through the entire thickness of the middle of the upper lip, including the mucous membrane, thus forming a strip of tissue about 1 cm. wide. The mucous membrane representing the vermilion border of the lip is removed, and this end is then sutured to a raw surface made just beneath the tip of the nose (Fig. 5). The raw sides of the strip are partially obliterated by suturing the skin and the mucosa together. The edges of the defect in the lip are brought together with sutures, and the scar becomes almost unnoticeable after a short time. The exposed mucosa forming the lower border of the columella eventually takes on a resemblance to true skin (Fig. 6).

21. Dieffenbach: Chirurgische Erfahrungen, Berlin, 1829, p. 23.

CONCLUSION

In my experience, in extensive deformities and defects of the alae of the nose, better results will be obtained by sacrificing these defective parts and entirely reconstructing them from a single forehead flap, rather than by making a patchwork nose in utilizing portions of shrunken alae and other remnants (Fig. 8).

NASAL DEFORMITIES ASSOCIATED WITH CONGENITAL CLEFT OF THE LIP *

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ST. LOUIS

The results of operative repair of harelip vary from nearly perfect to plain bad; but, unless the original operator has been more than ordinarily inconsiderate in his denudation and suturing, the tissues can usually, by secondary operation, be rearranged to produce an approximately happy result. One or several abnormalities may cause the repaired lip to be displeasingly noticeable. Among these, the most common are ugly scars, notched lip, poor approximation of the vermilion border, increase in length of the upper lip at the expense of its width with a resulting narrowing of the mouth slit, flatness of the upper lip, and protrusion of the lower lip. On the other hand, the upper lip may be too short. Loss of the premaxilla is rare, but quite disfiguring. If the denuding incision is made within the thin tissue that may border a cleft, there will be a characteristic and very ugly bulging of the lip on each side of the line of repair, which is as noticeable in profile as in the full face view.

Fig. 1 (Case 1).—Notched lip and spread nostril: *A*, before secondary operation; *B*, after secondary operation.

There are certain deformities that pertain to the nose and nostril, with which this paper will deal, and for the sake of simplicity the consideration will be confined to cases of single cleft. Even when the actual cleft is confined to the lower border, being mostly a vermilion lined notch, there is in almost all cases some abnormal

* From the Surgical Department of the Washington University Medical School.
* Read before the Section on Stomatology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

width of the nostril on the affected side, with a corresponding lateral spread of the ala. If it is a complete cleft of the lip and palate, with no bar of soft tissue crossing the floor of the nostril, then at birth the width of the cleft will be limited by the ala, which later will be found drawn tightly across the gap, its natural arch being entirely lost.

The anatomic significance of the flare or spreading of the nostril is that the ala has been allowed to retain or return to its abnormal association with the maxilla, whereas, normally, the labial attachment of the ala is in close relation with the premaxilla and columella. Reestablishment of the natural relation of the ala to the columella is necessary to normal development of the nose. In the primary operation, this point is often missed. Spreading of the ala is the most common defect remaining after harelip operations; less commonly, tissue may have been removed that belonged to the floor, with a resulting narrowing of the nostril. Somewhat in proportion to the amount of this spreading, the following abnormalities will persist or develop with growth: loss of the transverse ridge that forms the anterior boundary of the floor of the nostril, changes in the direction of the long axis of the nostril, flattening of the tip on the affected side, and flattening or even an infolding of the affected ala. The cartilaginous septum at birth will have deviated away from the cleft, but later it will buckle in such a way that its lower border will impinge into the uncleft nostril, and the convexity will obstruct the nostril on the affected side. In many cases,

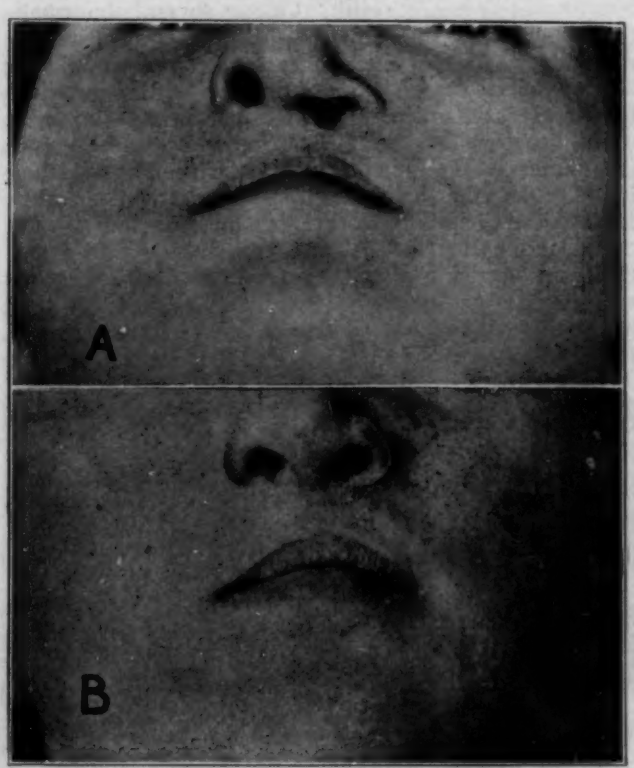

Fig. 2 (Case 2).—Severe ala displacement: *A*, before secondary operation; *B*, after secondary operation.

the whole external nose, starting at the nasion, will deviate away from the affected side. In older children, the ala itself will be found narrowed from above down, and, in spite of the increased width of the nostril, shorter from the tip of the nose to the lip than its fellow on the unaffected side. The ala of the cleft side may have been originally longer from tip to lip than its fellow, but on the maloperated lip it is, as a rule, actually shorter, and is always shorter than it appears. Added to this, the outline of the lower border of the affected nostril will be minus the concavity naturally present in its anterior part, with the result that the ala protrudes downward with an awning-like fulness.

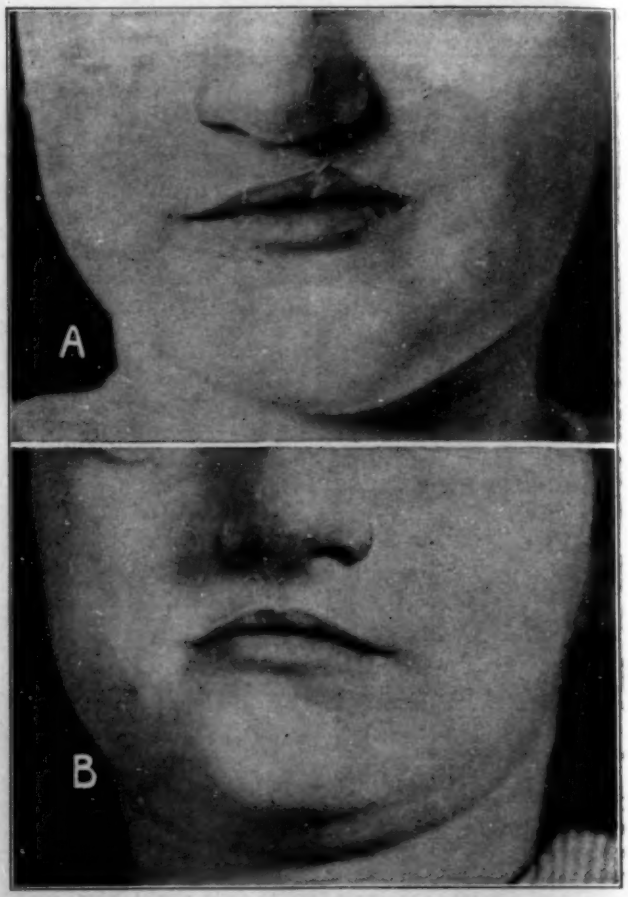

Fig. 3 (Case 3).—Deformity necessitating the removal of crescent-shaped segment of overhanging ala: *A*, before secondary operation; *B*, after secondary operation.

At first glance, the correction of the spread nostril would seem somewhat simple; but after some years of more or less persistent effort with very indifferent results, I concluded that it was not as easy as it seemed. Until I came to appreciate that the change in the direction of the long axis of the nostril, rather than the real or apparent increase in the width of its floor, was the key to the deformity, and until means were taken to correct this rotation of the axis, the operative results fell very short of what they have been since. In infants and most young children, reconstruction of the nostril floor, with the repair of the lip, is all that is necessary. In a secondary correction, when the rotation of the long axis of the nostril opening is not very great, narrowing and bringing forward the floor of the nostril may be all that is needed. In older children or young adults with marked deformity, counter-rotation of the walls of the affected nostril, resection of the nasal septum and occasionally total subcutaneous detachment and replacement of the bony framework of the nose may be additional requirements to give the best obtainable result.

REPORT OF CASES

CASE 1.—The following abnormalities are illustrated in this case. There was an increased width of the floor of the

affected nostril, with loss of the ridge which, except in the negroid type of nose, normally marks the junction of the floor with the lip. The innermost part of the labial attachment of the ala, that part which normally swings round under the nostril, pointed more nearly downward than its fellow. The columella was drawn to the opposite side.

When the head was thrown back, the long axis of the nostril had a direction only slightly more transverse than its fellow, but the nostril was situated on a plane somewhat posterior. Associated with this there was a flattening of the tip of the nose and some drooping of the ala on that side. The affected ala was shorter from above downward, and the whole lower nose deviated away from the cleft side. The septum buckled, with its convexity toward the cleft side.

In this case, the correction was made by reopening the lip with properly directed incisions and removing a small part of the floor of the nostril. The ala was cut free from the maxilla and nasal bones, and the adjacent part of the cheek was freed well upward and outward. The tissues were then sutured into the positions shown in *B*. Subsequent spreading of the ala was prevented, and the floor of the affected nostril was lifted forward by passing a mattress suture from the ala-labial fold through the tissues of the floor to the right side of the septum, the skin being protected by pieces of tinfoil on both surfaces.

CASE 2.—This case showed an even greater ala displacement than in Case 1, with an exaggeration of the secondary deformities described. To correct the condition, the columella was split in the midline, the cut swinging outward along the line of junction of the floor of the nostril with the lip, and the whole nostril with its bordering ala was rotated into a

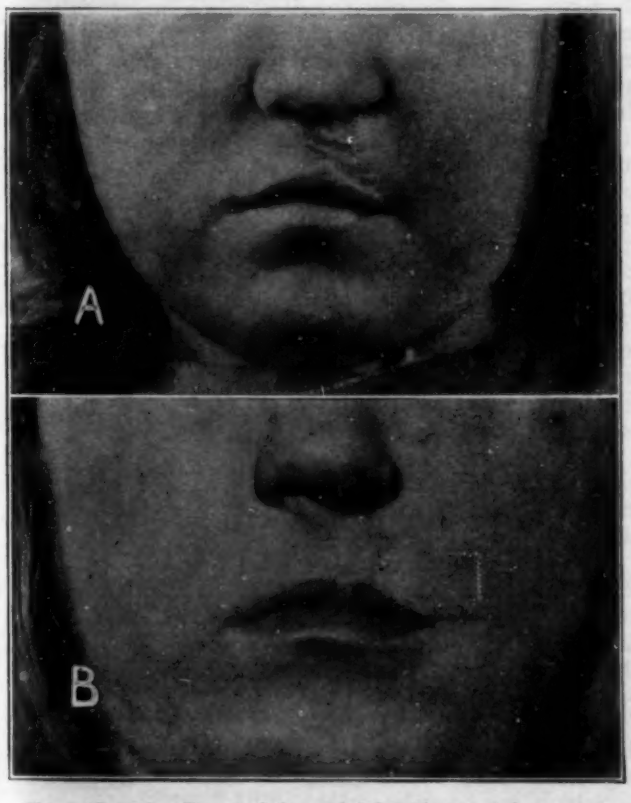

Fig. 4 (Case 4).—Characteristic nasal deformities: *A*, before secondary operation; *B*, after secondary operation.

more normal position. The lip was readjusted at the same time.

CASE 3.—In this case, for the deformities already described, splitting the columella and readjusting the lip and nostril were not sufficient to make a satisfactory correction, so, in addition, a crescent was removed from the full thickness of the inner end of the overhanging ala; drawing together the cut edges of this defect raised the overhanging border of the nostril, with the result shown in Figure 3 *B*.

CASE 4.—This was a case of a child with the characteristic nasal deformities, a rather rough scar and the peculiar maladjustment of the border that may follow the "Owen" operation. The decreased vertical height of the left ala shows very plainly.

Fig. 5 (Case 4).—Lateral views of same case as in Figure 4.

To correct the nasal deformity, the same plan was followed as that described in Case 2. The lip scar was also opened throughout and most of the scar excised, especially in the upper vertical part. This allowed the vermilion border to reach to the left angle, and when the lip was resutured a very desirable concavity from above downward had been established (Fig. 5 *A* and *B*). The lip was at the same time shortened in its vertical length.

Metropolitan Building.

INJURIES TO NERVES FROM SURGICAL TREATMENT OF DISEASES OF THE FACE AND NECK*

W. WAYNE BABCOCK, M.D.
PHILADELPHIA

Pain, spasm, salivation, paralysis or even death occurs from irritation or injury to certain nerves during operations on the face and neck. The symptoms may follow compression, tension, torsion or division of nerves during operation; secondary edema or inflammation involving the nerve trunks; or pressure by new connective tissue or new growths. From the irritation of the facial nerve, convulsive tic occurs; from the irritation of the accessory nerve, torticollis, and from the irritation of the sympathetic in the neck, myosis, flushing and excessive perspiration of the face occur. Compression or division of the seventh nerve leads to facial paralysis; of the hypoglossal nerve, to limited movement and hemiatrophy of the tongue. Irritation of the trifacial nerve may be followed by severe neuralgic pains, or tic douloureux; of the lingual nerve, paresthesia of the tongue, and salivation; of the cervical branches, neuralgic pain and paresthesia of the neck, ear and occiput. When both hypoglossal, pneumogastric or recurrent laryngeal nerves are divided, death from difficulty in deglutition or respiration may occur.

Radium and roentgen-ray paresthesia is especially distressing. The condition is common in the tongue, jaws and neck, involving areas supplied by the trifacial, glossopharyngeal, superior laryngeal, lingual and cervical branches. It particularly follows heavy irradiation

* Read before the Section on Stomatology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

by radium, and may appear within a few hours after the application, indicating an immediate action on the nerve, or develop after some days or weeks from secondary degeneration or the compression of nerve fibrils by a secondary fibrosis, or from the local necrosis and toxemia of an irradiation burn. The pain is burning, boring, gnawing, stinging, aching, and is almost constant, preventing work or sleep, and in severe cases usually lasts about six months, when it gradually dis-

Fig. 1.—Absence of any paralysis of the lips with extensive destruction of the tissues in the lower facial angle for carcinoma (patient of Dr. J. O. Bower).

appears. With constant pain, loss of sleep, inability to eat and continual resort to opiates, the patient's resistance fails and dyscrasia develops. The loss of physical resistance and morale may drive the patient to suicide or to prefer the original cancer rather than the radium neuritis. The treatment is difficult and unsatisfactory. The free excision of the burned and irritated area and the closure of the defect by plastic operation or by skin grafting is desirable when it is feasible. Particularly is this true when ulceration or necrosis is present. The area is sterilized, if possible, by a strong solution of zinc chlorid and is excised, and the defect closed. When such an operation is not feasible, attempts may be made to block the supplying sensory nerves. For the tongue, the lingual nerve may be injected with 3 per cent. phenol (carbolic acid) in physiologic sodium chlorid solution, or by 80 or 90 per cent. ethyl alcohol. The nerve, which runs close to the mucous membrane, near its reflection at the anterior border of the ramus of the jaw, is usually injected through the mouth in the retromandibular triangle (Fig. 2), or by entering the needle under the ramus of the jaw and guiding the point by the finger in the mouth. The posterior third of the tongue is supplied by the glossopharyngeal and branches of the superior laryngeal nerves. The glossopharyngeal nerve may be exposed high under the sternomastoid as it runs on the internal carotid. Pain in areas supplied by the fifth nerve may be controlled, as in tic douloureux, by the injection of alcohol at the points of exit of the various nerve branches from the skull (Fig. 3). In very severe cases, the more serious injection or division of the posterior roots of the gasserian ganglion may be warranted (Fig. 4).

Distressing paresthesia of the great auricular and other branches of the cervical plexus may also follow chronic inflammatory conditions of the neck, particularly in chronic fibrotic and suppurative tuberculosis of the lymph nodes of adults. The parts are so matted and infiltrated that a satisfactory removal of the infected tissue is difficult without an extension dissection *en bloc*. As a rule, rather than possibly increase the nerve irritation by operation, it is better to depend on tuberculin, irradiation, heliotherapy and injections of bismuth paste. A modification of Beck's paste consisting of 50 per cent. bismuth subiodid in white petrolatum is very useful for the injection of sinuses after they have been treated with 90 per cent. phenol followed by tincture of iodin. For the relief of the pain, the great auricular nerve and adjacent branches of the cervical plexus may be blocked by an injection of from 2 to 5 c.c. of a 2 per cent. phenol solution along the middle third of the posterior border of the sternomastoid muscle (Fig. 5).

FACIAL NERVE

The facial nerve spreads in a fan fashion from the parotid gland to the muscles of the face. There are two triangular areas, one with the base formed by a vertical line passing from the upper to the lower border of the orbit, and a second with its base formed by a vertical line connecting the margins of the lips, in which there are relatively few motor branches (Fig. 6). Operations may be carried out in these triangular areas without noticeable paralysis of the eyelids or lips. As the branches of the facial nerve run below the skin and fascia, superficial incisions may be made in any direction; but deep incisions should radiate from the parotid gland to the anterior part of the face, following the general directions of the branches of the nerve. If it is necessary to deviate from these lines, the separation of the deep tissues should be made bluntly with Mayo scissors or a dull dissector. An exception may be made of the orbicularis oris, which may be divided in nearly any direction.

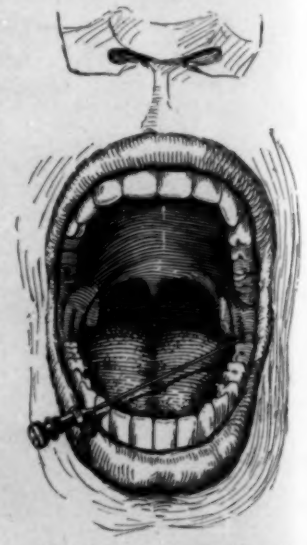

Fig. 2.—Injection of lingual nerve in the submucous tissue within the anterior border of the ramus. The mandibular nerve is injected from 2 to 2.5 cm. farther back at the middle of the ramus, above the lingula.

In operating for malignant disease, especially of the parotid, often it is impossible to avoid dividing branches of the facial nerve. Even the application of radium may be followed by facial paralysis. This, however, is usually transient. In a recent case, in which my associate, Dr. Bower, placed radium needles in the maxillary antrum, paralysis of the sixth nerve, with internal squint, promptly developed, but lasted only a few days. Facial palsy may often be improved by an anastomosis with the hypoglossal or spinal accessory nerves. Rarely, however, is the restoration complete or absolutely satisfactory, and in many cases the anastomosis is not

feasible or desirable. For these patients, a degree of improvement for the relaxed and drooping features may be obtained by the simple face lifting operation of "beauty specialists" (Fig. 7) or the insertion of tendons of buried silk. In the former, free sections of scalp, elliptical or of other shape, are removed above the hair line anterior to the ear, or above the temples, and the tissues of the face raised by suturing the defect. In time, the tissues tend to stretch so that a second operation may be desirable. More permanent support may be given by embedded strands of silk, which have one end embedded in the paralyzed muscle and the other end attached to the periosteum or deep fascia. For the mouth, a loop of No. 0 or 1 silk, which has been carefully sterilized and then immersed in a 1:1,000 solution of mercuric chlorid, is subcutaneously threaded into the orbicularis oris of the under lip. The ends of the loop are then threaded back through the points of puncture into the deep tissues of the face, carried and anchored near an appropriate portion of the malar bone or zygoma, then brought out again through a single puncture, and the ends tied with sufficient tension to bring the mouth to the required position (Fig. 7). In a similar manner, with a loop of fine silk threaded through the orbicularis palpebrarum of the lower lid and brought out through the fascia of the outer portion of the supra-orbital ridge, the paralyzed lower lid may be permanently lifted. As the operation requires only a few needle punctures, and as the knots are cut short and permitted to sink deeply under the skin, little scar or evidence of the operation remains, provided infection is prevented. Slips turned down from the temporal muscle may also be used.

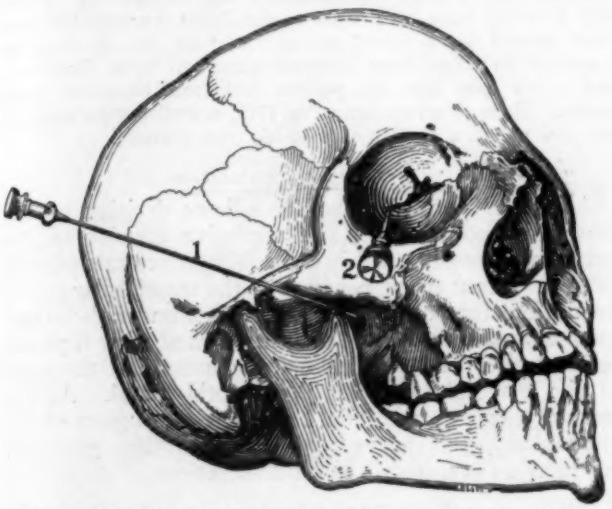

Fig. 3.—Injection of trigeminus at foramen ovale and rotundum: 1, needle at foramen ovale is entered 1 cm. in front of the articular eminence of the zygoma and passed slightly upward and backward along the base of the skull until arrested by the pterygoid plate, just back of which it is guided to the foramen, about 4 to 4.5 cm. from the skin surface; 2, needle to foramen rotundum has been entered at lower, outer border of orbit, and carried along the floor of the orbit into the inferior orbital fissure to the foramen, which is reached at a depth of about 5 cm.

CONVULSIVE TIC

Irritating spasm of the muscles supplied by the facial nerve is usually easily controlled by the injection of a 2 per cent. solution of phenol into the affected nerve fibers. If the tic involves the eyelids or the occipital frontalis, the affected nerve is blocked by carrying the hypodermic needle to the point of the articular eminence of the zygoma, withdrawing the needle 2 or 3 mm., and then infiltrating 1 or 2 c.c. of the solution over and just below the zygoma. Paralysis of the orbicularis and adjacent muscles supplied by the facial nerve immediately follows, which passes off within a week or ten days, and as a rule the tic does not return. If necessary, the injection may be repeated.

For a tic involving all the muscles of the face, the main trunk of the facial nerve may be infiltrated by entering the needle between the ramus and mastoid process on a line with the lower edge of the lobule of the ear. For the lower part of the face, the needle should be carried down to the angle of the jaw, withdrawn slightly, and 2 or 3 c.c. of the phenol solution injected in a plane extending along the posterior border of the ramus, from 1 cm. below to 3 cm. above the angle of the jaw.

Interruption of nerve conduction may be obtained by injecting from a 2 to a 5 per cent. solution of phenol in physiologic sodium chlorid solution, a 5 per cent. solution of antipyrin, a 1 to 5 per cent. solution of quinin and urea hydrochlorid, a 70 to 96 per cent. solution of alcohol, or a 1 to 2 per cent. solution of osmic acid. Interruption from the injection of 2 per cent. phenol or 1 per cent. quinin solution lasts from three to ten days; from the alcohol injection, six weeks, while the osmic acid produces a permanent destructive action. For a transient effect, dilute phenol is preferable to alcohol or quinin, as it is less painful and destructive. If the injection of phenol is preceded by the use of a 1 per cent. solution of procain, the tissues are not only anesthetized, but the accuracy of the injection is shown by the immediate paralysis produced by the local anesthetic. After the alcohol injections, while motor impulses usually return in six weeks, sensation may be abolished for from six months to two years. The osmic acid, with its affinity for fat, attacks the myelin sheaths and leaves a dense scar in the region of the injection, more or less impermeable to regenerating nerve fibers. It gives, therefore, a most destructive and permanent form of nerve blocking, and should be used only with an open operation and direct exposure of the nerve. A transient

Fig. 4.—Injection of gasserian ganglion: A needle 10 cm. long has been entered 3 cm. lateral to the mouth, and has been guided by a finger in the mouth to the inside of the ramus into the foramen ovale and ganglion. The needle, from the front, points toward the pupil of the eye and, from the side, toward the articular tubercle.

reduction in the conducting power of a nerve also may be produced by exposing and stretching the fibers.

DEATH FROM NERVE INJURY IN OPERATIONS ON THE NECK

Unilateral division of any of the cranial nerves may occur without dangerous symptoms. When, however, both hypoglossal, both pneumogastric or both glossopharyngeal nerves are divided, the patient is in danger of death from suffocation unless immediate measures are taken. The division of one hypoglossal nerve leads to hemiatrophy of the tongue, with some limitation of movement, but gives little disability. When both hypoglossal nerves are divided, the tongue, no longer under control, falls back into the pharynx, and may cover the epiglottis and immediately suffocate the patient; or, as liquid and solid food cannot properly be swallowed, death may occur later from the entrance of material into the trachea. I can report one death from this cause.

Fig. 5.—Sensory nerves of the neck: 1, accessory nerve; 2, auricularis magnus; 3, occipital nerve; 4, cervical branch of the facial; 5, cutaneous colli; 6, supraclavicular nerves; illustrating that most of the sensory nerves of the neck may be blocked by an injection along the middle third of the posterior border of the sternomastoid muscle.

A man, aged 53, six months after the resection of the left side of the tongue for a small epithelioma, returned with an extensive bilateral infiltration of the neck. For this a dissection *en bloc* of the right side of the neck was first done. There was a diffuse infiltration in the submaxillary triangle, involving the hypoglossal nerve, and a portion of the nerve was resected. The patient suffered no apparent inconvenience from this operation, although there was, of course, hemiparalysis of the tongue. About ten days later, the operation was repeated on the left half of the neck. As the cornu of the hyoid bone was approached, the malignant infiltration was again found to include a portion of the digastric muscle and the hypoglossal nerve, as on the right side. After debating a moment, and being unable to recall any catastrophe from dividing both nerves, I continued the bloc dissection, excising the infiltrated tissue with a short portion of the hypoglossal nerve. Immediately, the assistant, watching at the head of the patient, reported that the patient was unable to breathe. By changing the position of the head and pulling forward the tongue, I was able to induce resumption of respirations; but it was evident that the patient would suffocate unless the tongue was continuously held forward. A traction thread was placed in the tongue, the divided ends of the hypoglossal were immediately liberated and united by suture, and the operation was completed. When the patient awoke, it was found that, when kept in a sitting posture with the head forward, he could breathe, but the tongue would drop back when he became recumbent. The patient could not swallow, and fluids from the mouth tended to enter the open larynx. As feeding by a tube through the mouth or nose did not seem feasible, a Witzel gastrostomy was carried out. Probably it would have been wiser to substitute tracheostomy and then depend on a nasal or gastric tube for feeding, as bronchial irritation from inspired secretions soon developed, and a few days later the patient died from bronchial pneumonia. Since this experience, in 1913, a well known surgeon has told me of a similar case in his own practice.

SALIVARY GLANDS

Arrest of parotid secretion follows division of the auriculotemporal nerve, and operative division of the nerve has proved useful in controlling inveterate parotid fistulas. From the upper part of the mandibular nerve, the auriculotemporal nerve passes back under the external pterygoid muscle and may be reached after it passes between the sphenomandibular ligament and the neck of the mandible to enter the parotid gland. As the secretory fibers come from the petrosal ganglion of the glossopharyngeal nerve, operations on the gasserian ganglion do not abolish parotid secretion.

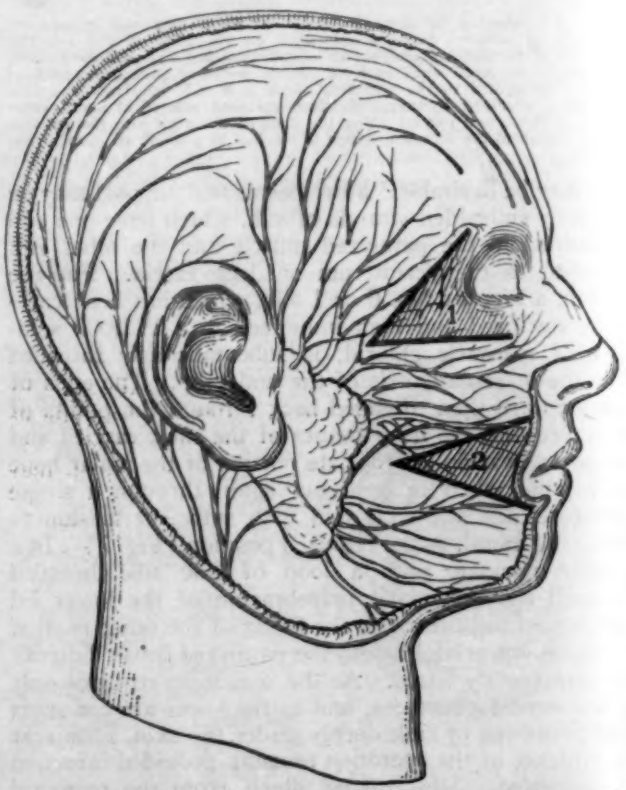

Fig. 6.—Distribution of facial nerves: 1 and 2, upper and lower triangular areas in which operations may be performed with little danger of facial paralysis.

Destruction of the submaxillary ganglion or division of the chorda tympanii produces a temporary arrest of secretion of the submaxillary and sublingual salivary glands, which may be followed in twenty-four hours by a continuous paralytic secretion. If secondary degeneration of the gland does not occur, this continuous secretion may be so troublesome as to justify excision of the submaxillary gland. Obviously, disturbances in

salivary secretion may occur from disease or injury of the fibers of the chorda tympani in their course in the facial nerve, the middle ear, or while incorporated with the lingual branch of the trigeminus.

VAGUS

Besides branches to the heart, lungs and abdominal viscera, the pneumogastric nerve supplies motor fibers

Fig. 7.—Type of face lifting operation used to improve the deformity of facial paralysis: An area of the entire thickness of the scalp, of elliptical or other shape, is excised above the hair line and so closed as to produce proper traction on the mouth and lower lid.

to the levator palati and both motor and sensory fibers to the larynx. High division, therefore, is followed by paralysis of the soft palate and paralysis and anesthesia of the larynx. Stimulation of the pneumogastric nerve during operation by traction, pinching or torsion may produce serious symptoms and even respiratory and cardiac arrest. When exposed to operative irritation, the vagus should be blocked by applying procain or some other local anesthetic. Division of one or both pneumogastric nerves does not produce a dangerous effect on the heart. From one nerve there may be only a slight and transient tachycardia. Division of both nerves is dangerous, however, from its paralytic effect on the larynx. During inspiration, the paralyzed cords fall together, producing asphyxia. An immediate tracheotomy or intubation may prevent death. Obviously, while the interruption or division of one recurrent laryngeal nerve causes hoarseness, dysphonia and cough, division of both recurrent nerves leads to suffocation and the need of an immediate tracheotomy.

The recurrent branch is, of course, most often injured during the operation of thyroidectomy. While the retention of the posterior capsule of the thyroid, as suggested by Charles Mayo, is a measure of protection, the nerve may be injured through the capsule by clamps applied to the deep bleeding points at the side of the trachea; or when the nerve is displaced from its groove by traction, it may be damaged in what is apparently safe territory. The method of Crile and others, in thyroidectomy, of first dividing the isthmus, and then obliquely incising each lobe so as to leave a thin layer of gland on each side of the trachea, seems an excellent way of protecting the nerve. Frazier has recently attempted the operative anastomosis of the divided recurrent nerve with encouraging results and, with Jackson, has suggested the use of the descendens noni. In the Mayo Clinic, a degree of recurrent laryngeal paralysis has been found in about 6 per cent. of the cases of toxic adenoma of the thyroid before operation. This indicates the importance of a routine preliminary laryngoscopic examination before thyroidectomy.

Near the base of the skull, the superior laryngeal nerve branches from the vagus, and, through the internal laryngeal nerve, which pierces the thyreohyoid membrane at the posterior border of the thyreohyoid muscle, carries sensation from the mucosa of the larynx. Bilateral division of these laryngeal nerves produces anesthesia of the larynx and, from loss of reflex cough, the danger of inhalation pneumonia.

Irritation of the external laryngeal nerve, also a branch of the superior laryngeal nerve, causes spasm of the glottis. From its location, this nerve may be damaged when one is ligating the superior pole of the thyroid. Laryngismus stridulus from reflex irritation of the external laryngeal nerve or the vagus may come from tuberculous or malignant lymph nodes in the neck or chest, or even gastric disease.

Fig. 8.—A face lifting operation for facial palsy by the subcutaneous insertion of buried fine silk tendons: The sutures are anchored close to the periosteum, threaded into the paralyzed muscles, and tied with sufficient tension to produce the desired lifting effect. The knot sinks below the skin, and the ends are cut short. 1, 2, 3, points of insertion and emergence of the needle in lifting the orbicularis oris; 1′, 2′, 3′, points of entrance and emergence of the needle for raising the orbicularis palpebrarum. Instead of silk, we have found slips from the lymphoid muscle useful.

In laryngeal pain or spasm, the superior laryngeal nerve may be injected before its division just above the great cornu of the hyoid bone. A long needle is introduced in the midline of the thyrohyoid space, car-

ried along the hyothyroid membrane to the great cornu, and the injection made. This has been especially used in painful ulceration of the larynx.

The accessory nerve is a motor nerve of the sternomastoid and trapezius muscles. It enters the anterior part of the sternomastoid muscle on a line with the angle of the jaw, emerges at the junction of the middle and upper thirds of the posterior border of the muscle, and obliquely crosses the posterior triangle of the neck to enter the trapezius. It is usually injured in operations on the cervical lymph nodes, and the chief deformity produced is a shoulder drop up to 5 cm. on the affected side. In some patients shoulder drop does not occur, as there is sufficient collateral innervation of the trapezius from the cervical plexus. While paralysis of the sternomastoid alone causes little disability, it flattens the neck on the affected side. Temporary division and suture of the accessory nerve is a routine step in an operation for tuberculous glands of the neck in some of the German clinics. We do not commend this procedure. Acute and transient torticollis in children is often the first evidence of tuberculous cervical lymphadenitis, the diagnosis being confirmed by the appearance of palpable nodes a few days after the onset of the torticollis. Spasmodic torticollis may be treated by injecting the spinal accessory nerve as it enters the anterior border of the sternomastoid muscle in a line with the angle of the mandible.

This brief reference to injuries of important nerves in surgical procedures about the jaws and neck is intended to be more suggestive than comprehensive. While much attention has properly been given to the prevention of these injuries, when disability has occurred we should not fail to consider the possible measures for relief or improvement.

1601 Walnut Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KAZANJIAN, IVY, BLAIR AND BABCOCK

DR. CARL BECK, Chicago: I wish to touch on two points only—the expert plastic surgeon and the "beauty doctor." One of the very remarkable results of the war is that plastic surgery has developed into a specialty. Formerly, it was the work of the general surgeon, and, fortunately, these men who have had a chance to operate in many cases during the war have gained so much experience that they have become expert in that difficult field of plastic work. During the last few years I have been glad not to work on the nose and face much because it is not a very thankful job. No matter how nice a nose one makes, the patient does not like it. I always like to tell what happened to a colleague who made a beautiful nose for a patient. After the death of the doctor the patient came to me, because I had helped in the work, and said, "I want my nose changed." I said, "You have a nice nose now;" but he insisted on a change. He blew his nose to demonstrate how it worked. His nose formed a big balloon, and it took him half an hour to squeeze the air out to get it back to its proper shape. These noses must be functionally good. This should be practiced by the profession and not left to the amateur. A few words about the beauty doctor: If we as a profession look down on and speak against some of those arts and cures which have some value but with which we do not want to bother, such as the improvement of beauty, laymen will take up that specialty and make it a profitable field. If I understood the doctor right, it is the duty of experts to develop some of the legitimate phases of surgery of shape and form in such a way that it does not appear to be a quack proposition but a legitimate cure by means of absolutely indicated surgical procedure.

DR. J. F. PERCY, Los Angeles: The subject of burns following the overuse of radioactive substances has interested me very much. I have had a considerable number of these patients referred to me, and I want to make the uncontrovertible statement here that the quickest and best cure for this type of suffering is the excision, when possible, of the involved area with the cautery knife. This procedure will stop the pain instantly. A recent case was one in which a malignant mass had occupied the whole side of the neck from the ear to the clavicle. It was treated with radium, which left a large, indolent, ulcerating crater. The carcinoma appeared to be cured, but the general condition of the patient was pitiable because of the pain and inability to move her head. She moved about as if the upper parts of her body were encased in a plaster cast. The ulcer was about 10 cm. in diameter and fully 4 cm. deep at its greatest depth. The walls of the ulcer were of the consistency of leather and from half to three quarters of an inch in thickness. There was no attempt at healing, no granulations, just a dead, grayish-looking lot of unhealthy tissue. There had been a previous, nearly fatal, hemorrhage from either the carotid artery or the jugular vein following the application of the radium. I dissected out all this leathery tissue with my cautery knife until I found the normal structures of the neck. This patient is now moving her head and neck normally, and the skin that now covers the original seat of the disease has a surprisingly healthy look. As a rule, they fill with healthy granulations in about two weeks, but they will not epithelize unless the edges of the cautery wounds are firmly and, if necessary, forcibly pushed, at least once a day, toward the center; move the granulating area from the sides, manipulate, even treat it roughly, and it will slowly cover with skin cells. This new skin will gradually become normal, barring the sweat glands, if the active manipulation is continued until no further improvement is possible.

DR. W. T. COUGHLIN, St. Louis: I have not had any experience with prosthetic surgery; hence, I cannot say anything about it, except that I have seen cases that would be better handled by prosthetic appliances than by a surgeon. Such cases are those that have had a good many attempts at plastic surgery. As regards the flap and the making of the nose, that leaves an unsightly defect on the forehead. I met one patient who absolutely refused to have his face marked up. In treating him, I took a flap from the chest by means of the tube pedicle of Gillis. I had to leave it for a long time because he did not come back, and when it was turned up he went away again for a long time. It worked very well. The difference in color of the skin was hardly perceptible, but in other cases that I had done more quickly the difference in color of the skin was very marked because the skin does not vascularize very well. If left in place some months before the pedicle is cut, it is almost the same as skin from the face. It must not be forgotten that the support of the nose is very important. One can make almost everything except a septum. The columnella gives no support whatever to the end of the nose. It is the septum that does the work, and to support such a nose when there is no means of making a septum (and a good one has not yet been devised) it is well to put in shingles of cartilage (in gable roof form). That avoids the unpleasant blowing out that Dr. Beck mentioned. In the upper lip repair, I saw the best mouth in the service of Dr. Morestin. I do not think that he lived long enough to publish a report of the case. Where the upper lip was lost he lifted up the lower lip and fastened it, cutting a slit in that and making the patient a new mouth.

DR. HARRY P. RITCHIE, St. Paul: Dr. Blair's plan for the secondary reposition of the ala is a most important contribution. The replacement of these structures is made in rotation, and I believe that we may take a lesson to be used in our primary operations. It is noted in his pictures that wherever the deformity at the nostrils is gross it is associated with a similar failure in the body of the lip, and wherever the body of the lip is good, the ala and nostril, while in diverse axis from the normal, may yet be fairly presentable cosmetic results, if the pictures were taken straight on or lateral. In fact, I believe there are great numbers of this particular deformity and I have been wondering whether the reason was not that we have not appreciated that the direction of approximation of the body of the lip and the

reposition of the ala are different. I am sure that the cleft lip is to be closed exactly in the lateral direction, whatever the degree of form of the cleft. The main structure in these tissues is the orbicularis oris muscle. I think this muscle may be called a sphincter, or it is at least sphincteric in its action. Considering it as such, then, we have no special problem but one that we are perfectly familiar with in general surgery. Sphincter muscle fibers should be brought together in the lines and planes of their action. The failure to do this permits stray fibers to come attached to the skin, which may over years of effort and growth defeat the cosmetic feature of the operation. There are several operations which require cross-cuts and flaps. If we consider this muscle as a sphincter muscle, then these are unsurgical and lead to distortion both at the ala and the vermilion border. If we agree that the approximation of the body of the lip is in a lateral direction, then the question arises whether we have not been replacing the ala in the same direction and whether this is not a reason for the subsequent flat nostril. Dr. Blair's demonstration suggests to us that this is wrong and that we should in the future make a more positive effort to rotate the ala, bringing into consideration two separate distinct procedures, cosmetic rotation of the ala based on a foundation of the exact and lateral approximation of the orbicularis oris.

DR. TRUMAN W. BROPHY, Chicago: One of the principal reasons why the nose is deformed in cases of congenital cleft lip, when single, is that the long portion of the bone, that part including the premaxillae, is moved outward from the center by pressure of the tongue in embryonal life. The spreading of the bony arch turns the nose to that side; on the opposite side the bones are depressed, which draws the nostril downward and outward. When traction of the orbicularis oris muscle moves the bones together anteriorly, they will not usually meet to form an arch, but one will lap over the other, remaining malposed and causing also the deformity of the nose.

DR. GEORGE V. I. BROWN, Milwaukee: One method of covering raw surface with skin has not been mentioned, although its author, Dr. Carl Beck, is present. No one has said very much about how he covered the forehead after having taken from it the tissue with which to form a nose. I had a patient, a boy, who had lost most of his nose, the upper lip and part of the anterior part of the mouth from some not very definitely reported disease condition in infancy. The lip was closed by direct approximation made possible by very wide dissection in undermining the surrounding structures without skin grafting. The nose was formed by placing a rib cartilage implant above and outside the remaining portions of his nasal bones. Later this was turned down with a flap to give an epithelial lining to the nose, and a flap carried down from the forehead and laid over the reversed cartilage embedded flap from which the external surface of the nose was formed, and the alae were constructed from small pieces of cartilage previously embedded under the skin of the abdomen. The plan of the operations was according to Gillies' modification of the Indian method, with suitable necessary additional modifications. The raw surface on the forehead was closed by lowering the hair line and then reducing the surface to be covered, and completed by the Beck method of stretching adhesive strips across the wound without skin grafting. I feel sure the scar is much less noticeable than it would have been by any form of skin grafting.

DR. FREDERICK B. MOOREHEAD, Chicago: In the reconstruction of noses in cleft lip patients, prevention is better than cure. Most of the flat nostrils are due to faulty first operation. The factors that control the construction of a well shaped nose are: (1) the proper orientation of the bones; (2) sufficient dissection of the soft parts to permit formation of nostril and lip without tension, and (3) the suturing of the muscles. I employ two rows of sutures, one of the mucous side which incorporates the muscles, and the skin suture which is placed superficially, depending entirely on the under row of sutures for tension. Where the nostril is not satisfactory, Dr. Blair's operation is the only one I know which offers a means of correction. In plastic surgery for the correction of serious defects, more particularly the building of noses, it is important that the new nose is not more unsightly than its absence. The type of artificial nose and ear made by Dr. Kazanjian and Dr. Villian of Paris are to be preferred to most noses built through the use of flaps. Sometimes large defects may be corrected by adhesive strips and rubber bands. The continued pull on the tissue will often make it possible to close a large opening with the use of a flap.

DR. V. H. KAZANJIAN, Boston: Referring to deformities evidenced in later years following harelip and cleft palate operations, we quite often find that the position of the septum and nasal bones contributes materially to the deformity. This is a point which I fear has not been sufficiently emphasized. In these cases the entire nose may be off center, a condition that is directly due to the distortion of the septum and the nasal bones. Therefore, in addition to the operative procedure described by Dr. Blair, we should correct the position of the septum by making a submucous resection and readjusting the nasal bones. In the case of deformities of the lip or cheek, the plastic surgeon is apt to be greatly tempted to transfer the necessary tissue from the lower part of the neck or the chest to fill the gap. To my mind, while in some cases this is necessary, indiscriminate use of this method will make the operation unnecessarily complicated. I have found in many instances that this type of operation may be simplified by taking the flaps from the immediate vicinity of the deformity rather than from a more distant point.

DR. ROBERT H. IVY, Philadelphia: Dr. Coughlin spoke about the deforming scars produced by taking forehead flaps. We are not concerned much with those because they are successfully dealt with by free skin transplantation from other parts of the body; in women, the hair can be draped down over the forehead and conceal the scars almost entirely, even though the defect has been allowed to heal by granulation.

DR. GEORGE C. SCHAEFFER, Columbus, Ohio: In regard to the forehead flap, I found in the Indian operations that in removing the large flap from the forehead we simply hold the flaps until they granulate and get a better method than skin grafting. There is one method of skin grafting on the face by outlay of skin that gives a better application. It consists in covering a piece of splint which is shaped exactly the size and shape of the defect, placing it with the "butter side" out and secured by a suture or a bandage. That was the use of the double pedicle flap for the rebuilding of the skin. In my case I had to have a double flap in fact for a good bed for my bone graft. I found difficulty in getting this flap and therefore used a flap from the chest.

Studies on Tick Virus.—In confirmation of earlier observation of previous workers, ticks of the species *Dermacentor andersoni* which have received the infection of Rocky Mountain spotted fever in the larval or nymphal stage retain it in the adult stage. A twenty-four incubation at 37 C. of unfed hibernating nymphs and adults infected as larvae and subsequent injection of emulsions of such ticks into guinea-pigs give a higher percentage of positive infection than the injection of similar ticks not incubated. Infection of Rocky Mountain spotted fever in adult ticks subjected to winter temperatures (32 F. or below) may be demonstrated by the production of immunity in guinea-pigs following the injection of tick viscera immediately on removal from cold temperatures by a moderate but typical spotted fever following the injection of ticks after twenty-four hours incubation at 37 C., and by virulent spotted fever following tick feeding or the injection of ticks after feeding. Control adult ticks free from all infection do not produce death or illness in guinea-pigs by feeding nor by injection of such ticks after feeding. One infected adult tick may contain after feeding from 3,000 to 5,000 minimum lethal doses for a guinea-pig. Emulsion of infected fed adult tick treated with 0.5 per cent. phenol will protect guinea-pigs against 1 c.c. of blood virus. Nothing in the behavior of blood or tissue virus is comparable to the changes observed in tick virus.—Spencer, R. R., and Parker, R. R.: *Pub. Health Rep.* **39**:3027 (Nov. 28) 1924.

DURATION OF INFECTIVITY OF GONORRHEA IN THE MALE

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The period in which gonorrhea began to infect man is unknown, but the earliest records make mention of it. The disease was treated crudely until 1879, when Neisser [1] discovered the diplococcus, which he termed the gonococcus, and which has since been looked on as the etiologic factor of the disease. Six years later, in 1885, Bumm,[2] a German investigator, reported that he had succeeded in securing the gonococcus through culture on peptone agar with serum as a medium.

In the work reported here, smears were tried and then the different mediums were used and finally hydrocele agar was chosen, which agar was first described by Wertheim,[3] in 1899. In growing the gonococcus on this medium, the method of reduced oxygen tension, as described by Schwartz,[4] in 1920, was followed.

At times it is difficult to obtain hydrocele fluid to make hydrocele agar, and often one has the misfortune of accidentally contaminating this fluid; therefore it was decided to experiment further with various types of medium. Hall [5] used the testicular agar as it was used by Hirschfelder [6]; but a word might be added here that some difficulty was encountered in growing gonococci on testicular agar on account of the gonococci being overridden by staphylococci, which are normal inhabitants of the male urethra; therefore it was decided to use anilin Type 1 to prohibit the growth of staphylococci. After trial with the different dyes, it was found that gentian violet added to the testicular agar in the proportion of from 1:200,000 to 1:500,000 appears to be of the greatest value. Brilliant green and methyl violet were also used with equally good results.

The methods of obtaining specimens has been as follows: First a swab was used, but this method was abandoned because it was impracticable, since in some patients the amount of prostatic secretion obtainable was so scanty that the amount on the swab was not sufficient to inoculate the surface of the medium to the extent of producing a growth. The method that I have been using recently is first to massage the prostate and vesicles vigorously (avoiding forceful manipulation causing bleeding), and allow the first drop or two of prostatic secretion to drip from the meatus; that is, discard the first few drops, as these drops have been found to contain more staphylococci than the subsequent drops; then to place a 1 c.c. glass pipet just within the lips of the meatus and withdraw as much prostatic secretion as can be obtained by means of a rubber bulb on the distal end of the pipet; 0.5 c.c. of the secretion from the pipet is then dropped slowly over the surface of the testicular agar slant. It might be well to state here that the agar should be at body temperature before being used. Immediately after inoculation, the agar is placed in an incubator at 37.5 C. After from twelve to twenty-four or forty-eight hours, cultures are examined, and the colonies of gonococci can be differentiated from the staphylococcus colonies by the fact that they are small and pin-point.

In most cases, it was impossible to demonstrate gonococci until forty-eight hours after the specimen had been incubated. Frequently, it was necessary to allow a week to elapse and in Case 4, seventeen days elapsed before gonococci could be accurately demonstrated.

The following are a few cases which have been considered worthy of report:

CASE 1.—A white man, short and of robust build, aged 26, single, consulted me, Nov. 11, 1921, stating that he wished to marry and wished to be absolutely certain that he was free of infection. In June, 1918, he had developed a gonorrheal infection, which was of a mild type, and received adequate treatment at the time. After the cessation of the discharge, there was no recurrence, nor were there at any time, during the course of the disease or following the disease, any complications. He stated that he did not suffer with epididymitis, prostatitis or any of the other complications during the acute attack of the disease. Aug. 1, 1921, three years and two months after the acute attack of gonorrhea, while riding horseback, he attempted to dismount and was caught in the saddle in such a way as to receive an injury to what he thought was the left testis. He paid little attention to it at the time and during that day, but two days afterward he noticed a swelling and visited the nearest physician, who referred him to a surgeon, who administered the usual treatment for epididymitis—rest in bed, suspension of the testes and constant application of an icebag. The patient remained under this treatment for about ten days or two weeks, after which time the swelling had greatly reduced and the acute soreness had almost disappeared. I questioned him as to a gonorrheal infection just before he met with this saddle injury, and he stated that there was no history of such, saying that he had had gonorrhea but once in his life, the attack in 1918, and that for weeks preceding the saddle injury he had had no exposure to infection. During the time he suffered with this epididymitis, there was no discharge from the urethra, nor has there been since. He said he was examined for this by both the physician whom he consulted and the surgeon who treated him.

Nov. 11, 1921, the patient showed no visible evidence of gonorrhea with the exception of a few shreds in Glass 2. The rectal examination, however, showed that the left lateral lobe of the prostate was enlarged and somewhat indurated, and that the left seminal vesicle was palpable. This lobe of the prostate and the seminal vesicle were massaged, and three smears taken from the secretion contained a few pus cells but no gonococci.

November 14, the prostate and seminal vesicles were massaged. Two tubes of hydrocele agar were inoculated with the secretion, and the following morning, after sixteen hours' incubation, gonococci were found.

The patient was treated for one month with posterior irrigations, after which more tubes were inoculated with prostatic and seminal vesicle secretion and found to contain gonococci also.

Treatment was continued for another month and, Jan. 25, 1922, the prostate and seminal vesicles were massaged, tubes of hydrocele agar were inoculated by the method described above and found, sixteen hours later, to contain gonococci, but the organisms were not nearly so numerous.

The patient was treated three times weekly during the next thirty days, and February 27 the test was repeated and found negative to gonococci.

Treatment was continued and, March 27, the test was repeated and found negative to gonococci. I advised the patient to remain off treatment for thirty days and to report to me so that I could make another test, and this being negative, I continued tests, all of which for five or six months were negative.

CASE 2.—A white man, aged 31, married, consulted me in October, 1921, complaining of a prostatic ailment. Like Patient 1, he had had gonorrheal urethritis in 1918. The active discharge lasted about four or five weeks, but a morning

1. Neisser: Zentralbl. f. d. med. Wissensch. **17**: 497, 1879.
2. Bumm: Deutsch. med. Wchnschr. **53**: 910, 1885.
3. Wertheim: Deutsch. med. Wchnschr. **17**: 1351, 1891.
4. Schwartz: J. Urol. **4**: 325, 1920.
5. Hall, I. C.: Testicular Infusion Agar, J. Bacteriol. **1**: 343 (May) 1916.
6. Hirschfelder, J. O.: A New Culture Medium for the Gonococcus, J. A. M. A. **62**: 776 (March 7) 1914.

drop remained for two or three months. Later, he consulted a urologist, who informed him that he had prostatitis and treated him with prostatic massages and irrigations. In September, 1921, about five weeks before he consulted me, he consulted another urologist, who passed sounds. About twenty-four hours after this, he noticed a thin discharge coming from the urethra. The following day he felt pain in the left epididymis. He returned to the urologist and was treated in the usual manner for that complication.

October 15, when the man consulted me, I found that there was no discharge from the urethra, but Glass 2 contained many shreds, some of which were elongated. Examination was otherwise negative, excepting the globus minor of the left side, which was enlarged, indurated and somewhat painful to touch, and the rectal examination showed that both lobes of the prostate were enlarged, but not indurated, and the seminal vesicles were not palpable. Smears from the prostatic secretion showed many pus cells but no gonococci. Four days later, the prostate was massaged and tubes of hydrocele agar were inoculated and, after eighteen hours' incubation, gonococci were found. The patient was treated from this time until March 11 before negative smears could be obtained.

CASE 3.—A white man, aged 24, single, was referred to me, May 15, 1921, with a diagnosis of epididymitis. He had had gonorrhea three months before, complicated by a left epididymitis, for which he was treated. There was no discharge from the urethra. The examination was negative, except that the left globus minor was enlarged and very painful to touch and the left lobe of the prostate was enlarged, and the left seminal vesicle was palpable and indurated. Smears taken after massage of the prostate and seminal vesicles contained many pus cells (about 90 per cent.) but no gonococci. Five days later, hydrocele agar was inoculated with prostatic secretion, and the following day a large number of gonococci were found. This patient was treated with massages and posterior irrigations for sixty days, but no bacteriologic improvement could be noted. The patient was forced to leave town, and consulted me again, November 1, when cultures from the prostatic secretion again showed gonococci. The cultures remained positive until July 1, 1922.

CASE 4.—A white man, aged 42, seen by me in consultation, had suffered with arthritis for many years. He stated that he had no gonorrheal infection; therefore, attention was directed away from the genito-urinary organs and another focus was sought. The teeth were examined by roentgen ray and the sinuses were roentgenographed several times. The tonsils were normal, so that all possible foci other than the prostate and seminal vesicles were eliminated. The prostate was enlarged and somewhat boggy, and the left seminal vesicle was slightly palpable. Four tubes of testicular agar were inoculated, and after seventeen days of subculturing, a pure culture of gonococci was obtained.

CASE 5.—A white man, aged 34, who wished to marry, presented himself for examination, Aug. 13, 1923, to see whether or not "all traces of gonorrhea had cleared up." He had had gonorrhea eight or nine years before, and said that since that time mucus has appeared at intervals, especially in the morning. He showed no evidence of a discharge from the urethra. Rectal examination showed the prostate to be normal and the seminal vesicles not palpable. Smears from the prostatic secretion, on testicular agar, showed the presence of gonococci. The man was treated actively for four months, at the end of which time the treatment was discontinued for a month, and cultures were taken, which were negative. He reported again in February, and cultures were negative. He reported again in March, the treatment having been discontinued in December, and the cultures were positive, so that treatment was resumed for two months. Cultures taken during the latter part of February were negative. He was advised to discontinue treatment for one month. He returned in the early part of April, when cultures were taken and found positive for gonococci.

CASE 6.—A white man, aged 36, single, had an attack of acute gonorrhea complicated by double epididymitis, prostatitis and seminal vesiculitis in June, 1921. Examination, March 1, 1923, showed that the prostatic secretion was thick and ropy. Two tubes of testicular agar were inoculated, and at the end of twenty-four hours' incubation many gonococci were found. The patient was advised to take treatment from his family physician, but did not do so. He reported for further examination, April 16, 1924. Three tubes of testicular agar were inoculated, all of which showed the presence of the gonococcus at the end of twenty-four hours' incubation.

Another class of patients in which culture tests are of value is that in which the patients report for treatment with scanty discharges, smears from which frequently are negative to the gonococcus, showing pus cells only. In these cases, the abstracts of a few histories are as follows:

CASE 7.—A white man, aged 30, reported for examination, July 9, 1923, stating that he had had acute gonorrhea in March, 1923, and when the discharge ceased, he discontinued treatment. A scanty discharge was present on massage of the urethra, three smears from which were negative for gonococci. Cultures on testicular agar revealed the presence of gonococci at the end of twenty hours' incubation.

CASE 8.—A white man, aged 19, examined, Oct. 22, 1923, gave a past history negative for venereal disease. He stated that five days previous to this examination, he noticed itching and the appearance of a thin, whitish discharge in the meatus, which was three days following exposure. Two smears were taken from this discharge, both of which were negative. Two tubes of testicular agar were inoculated, and both tubes showed the presence of the gonococcus at the end of sixteen hours' incubation.

CASE 9.—A white man, aged 26, was examined, Nov. 9, 1923. The past venereal history was negative. The patient stated that, November 4, he noticed itching and slight burning on urination. In the morning of November 7, he noticed a "drop" at the meatus. On massage of the urethra a slight, scanty discharge was obtained, the smears of which were negative for the gonococcus. Cultures taken on testicular agar from this patient were examined sixteen and twenty-four hours after incubation and found negative for the gonococcus; after forty-eight hours' incubation, they were positive.

CASE 10.—A white man, aged 38, examined, July 27, 1923, stated that eighteen months prior to this date he suffered a slight attack of gonorrhea and since then had had remittent discharges. Smears were negative, but as the man reported in the evening, he was requested to report early the next morning. The "morning drop" was obtained, and smears from this were examined microscopically, which were negative. The urethra was massaged, and cultures were taken on testicular agar, which contained gonococci at the end of twenty-four hours' incubation.

SUMMARY

In Cases 1 and 2, the patients had acute gonorrheal urethritis more than three years prior to the onset of the epididymitis, and in Case 5 the acute attack was eight or nine years before the examination. Patients 1 and 2 did not have epididymitis during the acute attack. In Case 1, the exciting cause of the epididymitis was undoubtedly trauma caused by instrumentation. In Case 4, it will be noted that it took seventeen days to grow gonococci. This was after subculturing daily. Case 6 was one of epididymitis paralleling in circumstances Cases 1 and 2, except that the complication occurred during the acute stage. My reason for making a report of these cases is that, although these men had no discharge or clinical evidence of gonorrhea, and in none of these cases could gonococci be found in the prostatic secretion when it was examined in smears, yet in all these cases gonococci were found by cultural growth on hydrocele or testicular agar.

Cases 7, 8, 9 and 10 are mentioned on account of the difficulty in making an accurate diagnosis by smears. All four of these cases gave negative smears, and without cultural methods it would have been impossible

to charge these men with having gonorrhea; therefore it might have been assumed, without these tests, that these men had some nonspecific urethritis other than gonococcal, which would have probably led to lack of vigilance in treatment and in handling the cases, and consequently would have led to spreading this infection.

CONCLUSIONS

No patient with gonorrhea should be released from treatment until he has had three negative cultures, each culture taken at intervals of one month, during which time there has been a complete cessation of treatment, as it has been found in this series of cases that cultures taken from patients under treatment have been negative, and when treatment has been discontinued for an interval of a few weeks and then cultures taken again, positive results have been found. It has also been found in this series of cases that the most damaging complication of gonorrhea, from the standpoint of the duration of its infectivity, is epididymitis, as it can be seen from the cases reported that in some instances the organisms have been found three or four years after an acute attack. Therefore every care should be taken to prevent this complication from arising during the acute stage of the disease.

All men who have had gonorrhea should be given cultural tests before marriage.

As disease prevention is being spread among young men, many young men, year after year, who have had gonorrhea, consult physicians before undertaking matrimony to ascertain whether or not they are still infectious. This class of patients should be subjected to cultural tests.

Attention is again called to the fact that many cases of gonorrhea cannot be diagnosed by smears. These persons are a menace to society and to public health, owing to this lack of obtaining an accurate diagnosis. Therefore the diagnostic aid described here should be of great value to public health authorities and to practicing physicians in making accurate diagnoses of these cases.

At the present time, we know, almost definitely, when to release a patient from quarantine in diphtheria, meningitis, typhoid fever and pneumonia. We also know definitely when it is safe to allow a patient who has had active syphilis to marry. In the past, we have almost totally disregarded gonorrhea. From an economic standpoint, this disease with its complications has proved to be one of our greatest factors in industrial work. It is an old story that it is responsible for many cases of salpingitis in newly married women. Tivnen [7] has found that it is responsible for 12 per cent. of the world's blindness.

If we are to require throat cultures in diphtheria before release, why should we not require prostatic and urethral cultures?

With testicular agar, the procedure is quite simple and should be of great value to urologists from a eugenic point of view, in cases of men who are contemplating marriage. Comment should also be made on the fact that, as in other infectious diseases, one or two negative cultures are valueless, since in some patients, after three or four cultures have been taken and found negative to the gonococcus, subsequent cultures reveal the presence of this organism.

The infectivity of gonorrhea is of longer duration than we have believed.

7 East Preston Street.

7. Tivnen, R. J.: Blindness, Caused by Ophthalmia Neonatorum, J. A. M. A. **63**: 1756 (Nov. 14) 1914.

SCHICK TESTS AND TOXIN-ANTITOXIN IMMUNIZATION

WITH ESPECIAL REFERENCE TO YOUNG ADULTS *

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From time to time, reports on the Schick test and toxin-antitoxin administration in Durand Hospital of this institute have appeared. Weaver and Maher,[1] in 1915, investigated the Schick test in relation to the antitoxin content in normal adults. They found that those having less than 0.04 unit of antitoxin per cubic centimeter of blood gave a positive Schick reaction, while those having 0.04 unit or more antitoxin per cubic centimeter gave negative reactions. These investigators pointed out the diagnostic value of the Schick test in differentiating between an ordinary follicular tonsillitis and a diphtheric throat infection. Persons with true diphtheria early show a positive reaction, while many with tonsillitis show a negative Schick reaction. Diphtheria carriers gave negative reactions, and the blood of some carriers in two weeks' time contained as high as 30 units of antitoxin per cubic centimeter of blood.

In 1916, Weaver and Rappaport [2] published further observations on the Schick test in young adults. Of 194 healthy adults, mainly nurses and medical students, 102, or 52.6 per cent., gave negative reactions. The older members of the group tended to show a higher percentage of negative reactions. In sixty-six persons with scarlet fever, ranging from 1 to 24 years of age, negative reactions occurred in 66.7 per cent. Ninety per cent. of twenty persons with tonsillitis gave negative Schick tests.

Mulsow,[3] in 1921, reported further observations with the Schick test and the initial results of toxin-antitoxin immunization among nurses and interns in contagious service. He found that sixty-five, or 67 per cent., of ninety-seven nurses and twenty-seven, or 66 per cent., of forty medical students gave positive reactions with Schick tests. Of thirty-one young adults with positive reactions given a course (three injections at weekly intervals) of toxin-antitoxin, twenty-six gave negative Schick tests after three or more months. At that time, nurses with positive reactions in the diphtheria service were protected by prophylactic doses of antitoxin. Mulsow found that this passive immunization in some way interfered with the active immunization by toxin-antitoxin, especially when the antitoxin injections followed the administration of toxin-antitoxin. He further noted that those individuals giving a severe reaction to the toxin-antitoxin injections usually developed an immunity more quickly and with less of the material than those showing no reaction. I can painfully testify to this observation. I formerly had a strongly positive Schick test and received an initial dose of only 0.25 c.c. of a 3 L + dose of toxin-antitoxin. The local and general reactions to this were so severe that the second and third injections consisted of only 0.5 c.c. each. This small total of 1.25 c.c. of toxin-antitoxin produced a negative Schick test in one month, and I have remained negative to the present time.

* From the John McCormick Institute for Infectious Diseases.

1. Weaver, G. H., and Maher, L.: J. Infect. Dis. **16**: 342 (March) 1915.
2. Weaver, G. H., and Rappaport, Benjamin: Further Observations on the Schick Test for Diphtheria Immunity, J. A. M. A. **66**: 1448 (May 6) 1916.
3. Mulsow, F. W.: Schick Test and Active Immunization with Diphtheria, J. A. M. A. **77**: 1254 (Oct. 15) 1921.

The present report covers 1,316 Schick tests made on 808 persons and 155 toxin-antitoxin immunizations at Durand Hospital during the period from Oct. 1, 1921, to July 1, 1924.

METHOD AND SITE OF ADMINISTRATION OF SCHICK TESTS

From the beginning, we have used the 1/50 minimal lethal dose of toxin so diluted in physiologic sodium chlorid solution that this amount is given in 0.1 c.c.

TABLE 1.—*Result of Schick Tests*

	Total	Positive		Negative	
		Number	Per Cent.	Number	Per Cent.
Nurses	613	445	72.6	168	27.4
Physicians and medical students	121	75	61.9	46	38.0
Unclassified: adult patients, etc.	18	12	66.7	6	33.3
Children	56	31	55.3	25	44.6
Total	808	563	69.6	245	30.3
Nurses and medical students (Hooker [6])	500	299	60.0	201	40.0
Nurses, hospital employees and physicians (Garland [7])	350	195	56.0	155	44.0
Nurses (White [8])	305	148	48.5	157	51.5
Nurses (Cooke [9])	147	86	58.5	61	41.5
Nurses (Mulsow [3])	97	65	67.0	32	33.0
Medical students (Mulsow [3])	40	27	66.0	13	34.0
Total	2,247	1,383	61.5	864	38.4

solution. The test is given intradermally with a No. 27 gage needle after the skin has been cleansed with alcohol. This dose has been used parallel with toxin from the New York Board of Health, and the results have been uniform. Because nurses on contagious duty are frequently scrubbing the hands and forearms, we have formed the habit of giving the test on the upper arm. The control test is given about 1 inch below the toxin on the same arm. This site is convenient and is free from probable infection; and when both are done on the same arm, comparison is easily made. The toxin is always given above the control. This habit seems a little easier to form than that of giving the toxin on the right arm and the control on the left, as is the usual practice. The control consists of the same material as the toxin except that it has been heated to 75 C. for five minutes. We have found the control especially useful in testing adults.

The diluted toxin deteriorates rapidly, especially at room temperature, so that fresh preparations must be made frequently. If a freshly prepared solution is placed in the icebox immediately, it remains potent for about one week. We place the fresh preparation in 5 c.c. containers and store it in the icebox. When a few tests are to be made, one of these small bottles can be used and then discarded. It is thus possible to have on hand a potent preparation at all times, by making up the dilutions about once a week and using only that which has been kept cold. The undiluted toxin, when kept dark and cold, does not deteriorate rapidly. We have used one lot of bulk undiluted toxin for over two years without appreciable change. This material is tested on guinea-pigs at intervals to determine the minimal lethal dose. The point of using a freshly prepared dilution of toxin is very important. If, in testing a nonimmunized group of individuals, there is found a high percentage of negative reactions, it is best to repeat the tests with a fresh solution of toxin.

RESULTS OF TESTS

Schick tests have been made on 808 persons, of whom 563, or 69.6 per cent., gave positive reactions. There were 752 adults, with 532, or 70.7 per cent., positive reactions. These adults were mainly nurses, young physicians and medical students. A small group of fifty-six children, taken at random just as they came into the office for tests, show thirty-one, or 55.3 per cent., positive reactions. Table 1 covers the reactions of the various groups. For the sake of comparison, other similar groups are listed with the reference in each case.

The number of positives found in this group is higher than that usually reported. An explanation of this was sought in the early residence—urban or rural—of the subjects. Zingher [4] has noted that children from the less crowded sections of New York City show a higher rate of positive reactions than those from the more congested districts. White [5] found 100 per cent. positive reactions in children in a Massachusetts town where there had not been a case of diphtheria for twenty-five years. An attempt is made in this study to classify the persons tested as urban and rural dwellers. Those born and reared on farms and in small towns are called rural, and those born and reared in large congested cities, where diphtheria is endemic, are called urban. No definite limit has been placed on the size of the town or the age at which the subject left it. If the subject was born in the country or in a small, isolated residential town and went to school during the early years there, he is classed as rural, although he may have subsequently moved to a large city. The early residence was listed for a total of 651 persons.

Table 1 also shows some sectional differences for Schick reactions in adults. Those reported by Hooker,[6] Garland [7] and White [8] are from the eastern coast, mainly in and around Boston. In a total of 1,155, there were 634, or 54.8 per cent., with positive reactions. Those reported by Cooke,[9] Muslow [3] and me are from the middle west, mainly in and around St. Louis and Chicago. In a total of 1,092, there were 741, or 67.8

TABLE 2.—*Influence of Early Residence on Schick Reactions*

		Total	Positive		Negative	
			Number	Per Cent.	Number	Per Cent.
Nurses	515					
Urban		139	72	51.8	67	48.1
Rural		376	307	81.6	69	18.3
Physicians and medical students	73					
Urban		23	11	47.8	12	52.2
Rural		50	37	74.0	13	26.0
Unclassified adults	9					
Urban		5	3	60.0	2	40.0
Rural		4	4	100.0	0	0.0
Children	54					
Urban		30	14	46.6	16	53.3
Rural		24	15	62.5	9	37.5
Total		651	463	....	188	....
Total urban		197	100	50.7	97	49.2
Total rural		454	363	79.9	91	20.1

per cent., positive. The higher percentage of positive reactions in the mid-West section is probably due to the less dense population in this area.

Table 2 brings out the differences in Schick reactions between those classed as urban and as rural. Of 454 rural dwellers, there were 363, or 79.9 per cent., giving

4. Zingher, Abraham: Schick Test Performed on More than One Hundred and Fifty Thousand Children in Public and Parochial Schools in New York, Am. J. Dis. Child. **25**: 392 (May) 1923.
5. White, B.: Boston M. & S. J. **189**: 1026 (Dec. 20) 1923.
6. Hooker, S. B.: Boston M. & S. J. **190**: 30 (Jan. 3) 1924.
7. Garland, J.: Boston M. & S. J. **185**: 432 (Oct. 13) 1921.
8. White, B., quoted by Hooker (Footnote 6).
9. Cooke, J. V.: Active Immunization of Nurses Against Diphtheria, Am. Jour. Dis. Child. **23**: 498 (June) 1922.

positive Schick reactions, while of the 197 in the urban group, 100, or 50.7 per cent., gave positive reactions. In the nurses' group of 376 classed as rural, 307, or 81.6 per cent., gave positive reactions. The nurses in the Chicago hospitals are drawn largely from the smaller towns and rural districts. The primary Schick tests were done usually early in the first year of training before there had been much opportunity for exposure. As nurses form the largest group in this series, the reason for the unusually high percentage of positive reactions in Table 1 is apparent.

In the total of 808, there does not appear to be much difference in the Schick reaction between males and females. Of 685 females, 486, or 70.9 per cent., gave positive reactions; of 123 males, seventy-seven, or 62.6 per cent., gave positive reactions. The slightly higher percentage of positive reactions in females may be explained on the basis of exposure. Boys are often more in evidence on the streets and in games where there may be more intimate exposure between members of a group than are girls.

Previous diphtheria does not seem to change the percentage of positive or negative Schick tests to an appreciable degree. Of twelve adults giving a history of diphtheria, six gave positive and six, negative Schick reactions. The tests were made from one to twenty years after the diphtheria infection. Those persons who have been healthy carriers of diphtheria usually give negative Schick tests.

It is generally thought that those persons showing a pseudo or combined Schick reaction will react more sharply to toxin-antitoxin injections than those who do not show the protein reaction. This has not been found to be the case always in this series. Some of those showing a strongly positive Schick reaction with no pseudoreaction have had the severest response to toxin-antitoxin injections. It is not always possible to foretell from the Schick test those who will show the most marked reaction to toxin-antitoxin administration.

Schick readings were made on these persons on the fourth or fifth day after the test. The combined and pseudoreactions are not tabulated, but the reactions are simply classed as positive or negative in regard to the need for toxin-antitoxin immunization.

TOXIN-ANTITOXIN IMMUNIZATION

Two hundred and fifty-two persons have been given the toxin-antitoxin mixture for immunization. Of 156 who have returned for a final Schick test from three to six months later, 144 have become immune, while twelve have still given a positive Schick test. Of the 144 immunized, twenty-five have required additional injections (from one to three) of toxin-antitoxin. Six had severe reactions and were given less than one course (three injections at weekly intervals) of toxin-antitoxin. All of them showed negative reactions on the retest, and usually in a shorter time—from one to two months—after the toxin-antitoxin injections.

In the early part of this work the 3 L + dose of toxin-antitoxin mixture was used. In seventy young adults immunized by this mixture alone, there were eleven reactions classed as severe. By this is meant a generalized reaction with a rise of from 2 to 3 degrees in temperature and a general feeling of malaise, so marked that the person had to go off duty. When the immunization involves loss of time, it is readily seen that the procedure will not be popular with hospital superintendents and supervisors, to say nothing of the individual concerned. When using the 3 L + mixture, it became the custom to give only half a dose (0.5 c.c.) on the first injection. If this caused no great discomfort, the full 1 c.c. dose was given at the next two injections. If the small initial dose caused a severe reaction, the next dose was reduced or the injections were discontinued.

During the past year, the toxin-antitoxin mixture containing 0.1 L + dose of toxin as prepared by the New York Board of Health has been used. In fifty-seven persons receiving this mixture, there has been only one reaction classed as severe. In seventeen persons given one course (three injections) of the 3 L + mixture, who did not become immune, additional injections of the 0.1 L + mixture have been given with no severe reactions.

Schroder and Park[10] have found that the 0.1 L + mixture produced as high a rate of immunizations as did the 3 L + mixture, less the severe reactions. Our experience in this series has been the same.

Table 3 shows the results of immunization by various mixtures.

TABLE 3.—*Results of Immunization by Various Mixtures*

Total given toxin-antitoxin mixture		252
Total completed: i. e., returned for retest 3 months or more after toxin-antitoxin injections		156
Total immunized	144	
By one course (3 injections)	113	
Requiring additional injections	25	
Requiring less than 1 course	6	
Immunized by 3 L + mixture: 1 course	62	
Immunized by 3 L + mixture: more than 1 course.	2	
Immunized by 3 L + mixture: less than 1 course	6	
Immunized by 3 L + mixture and 0.1 L + mixture.	17	
Immunized by 0.1 L + mixture: 1 course	51	
Immunized by 0.1 L + mixture: more than 1 course	6	
Did not become immune	12	
3 L + mixture: 1 course	10	
3 L + mixture and 0.1 L + mixture (1-3 injections)	1	
0.1 L + mixture: more than 1 course	1	
Total to return for retest		96

Children do not react as violently to the toxin-antitoxin injections as do adults. In this series there have been no severe reactions in children. In adults, the reaction usually consists of local swelling, tenderness and pain, with a headache, general malaise and a rise in temperature, starting generally the day following the injection, and in the more severe reactions, continuing for two or three days. In one young physician, the reaction took the form of a serum reaction. About the fourth day following the second injection of the 3 L + mixture, there was a rise of temperature with a headache and general malaise. During the night the patient felt a fulness of the throat and noticed that the lips, face and uvula were swollen. Fearing an edema of the glottis, a dose of epinephrin was taken, which gave some relief. For the next few days, the face was swollen, and the patient was several pounds heavier. The condition gradually subsided and no more toxin-antitoxin was given. Within three months he became immune, as indicated by a negative Schick test.

Whether an acute infectious disease destroys diphtheria immunity is unknown. One nurse, who had been immunized by toxin-antitoxin, subsequently developed scarlet fever, and on a retest was found to be positive. It has been said that measles lowers the resistance to diphtheria. Although we have done Schick tests on a number of measles patients, we have

10. Schroder, M. C., and Park, W. H.: Comparative Merits of New and Old Preparations of Diphtheria Toxin-Antitoxin, J. A. M. A. 81: 1432 (Oct. 27) 1923.

not found that the disease increased the number of positive reactions.

The percentage of pseudoreactions on the retest following toxin-antitoxin administration is higher than that of the primary Schick test. The number of pseudoreactions following the 0.1 L+ dose of toxin-antitoxin is also slightly higher than the number following the 3 L+ dose. There has always been a question concerning the sensitization of patients by toxin-antitoxin administration and a fear of serum sickness from subsequent injections of horse serum. In one person,[11] there was a severe serum reaction following the administration of diphtheria antitoxin to a nurse who had been previously immunized by toxin-antitoxin. A second instance of a similar reaction in a child was reported to us by a local physician. On the other hand, at least five patients have come into the diphtheria service in the hospital to whom toxin-antitoxin has previously been given. They were given antitoxin with no untoward result. It is difficult to say whether the toxin-antitoxin injections in the first two had any bearing on the subsequent serum reactions. If the toxoid preparation of the British [12] will immunize against diphtheria, perhaps it will be advantageous to use this instead of the toxin-antitoxin mixtures, which contain minute quantities of horse serum. We have used the toxoid preparation on one young physician who had had a violent reaction following antitoxin administration. There was no reaction.

The average time required to develop an immunity following the toxin-antitoxin injections in this series has been four and one-half months for the first course of three injections and twenty-seven days for the second course. These figures are only approximately correct for these reasons: If a nurse with a positive Schick test is contemplating contagious training, she is advised to have the toxin-antitoxin injections early in her course. She may not come into the contagious service for a year or more following the injections, at which time a retest is made. If it is negative, the time recorded for the development of her immunity is dated one year or more, as the case may be. If she has a positive reaction, one or two additional injections of toxin-antitoxin are given, after which she usually develops an immunity very quickly. On the other hand, if a nurse decides to take contagious training only two or three months before the time for entering the service, she is given the active immunization. When she comes on duty, the retest is done. If it is still positive, additional injections are given to hasten the development of the immunity. In several cases, the Schick test has become negative within a week after the second course of toxin-antitoxin. The immunity response may have been due to the first course, or it may have been hastened by the second. For these reasons, the average time of four and one-half months for immunity following the first course may be a little long, and the average time of twenty-seven days for the second course, a little short. This policy also explains why in this series twenty-five cases of the 144 immunized have had a second course of toxin-antitoxin. Probably some of the nurses in the latter group would have developed an immunity from the first course of injections, but, because they were ready for contagious service, additional injections were given to hasten the immunity response.

11. Crooks, T. T.: Late Serum Sickness from Diphtheria Antitoxin, J. A. M. A. **82**: 109 (Jan. 12) 1924.
12. Glenny, A. T., and Hopkins, B. E.: Brit. J. Exper. Path. **4**: 283 (Oct.) 1923.

One nurse, who had been immunized by toxin-antitoxin and had a negative retest, developed diphtheria while on contagious duty. A Schick test, made Oct. 16, 1922, was positive. Beginning October 20, she was given three injections of toxin-antitoxin containing the 3 L+ dose. December 13, she had a negative Schick reaction and a second negative Schick reaction, December 23. December 31, she developed diphtheria, was given 20,000 units of antitoxin, and made an uneventful recovery. Schick tests Feb. 14 and Dec. 11, 1923, were also negative. She is the only person in this series who has developed diphtheria after a negative Schick test. The Schick test is, of course, subject to error both in administration and in material. In this case, the tests were given by different persons from different lots of a fresh preparation, and both reported entirely negative tests. Since two subsequent tests were also negative, it does not appear that the test was wrong.

Dudley [13] reports a case of diphtheria developing in a boy with a negative Schick reaction. This patient was closely exposed to a carrier of virulent diphtheria bacilli. Assuming that the test is properly given and read, it is not at all unreasonable to suppose that one may receive a massive dose of bacteria, which may overcome a borderline amount of native diphtheria antitoxin in the blood. Park [14] says that it is too much to ask that a Schick test indicate the amount of antitoxin in the blood which will always protect against diphtheria.

One of our nurses, who was very near the end of the passive immunization period from a prophylactic dose of antitoxin, showed a negative Schick reaction and then developed diphtheria two days after the negative test. But in the vast majority of cases, the test is a reliable index of immunity, and it is only exceptionally that a person with a negative Schick reaction develops diphtheria.

PROTECTION AFFORDED BY TOXIN-ANTITOXIN ADMINISTRATION

It is felt that a severe test is placed on toxin-antitoxin immunization in a contagious disease hospital, where the nurses are constantly exposed to severe, virulent cases of diphtheria. If the process can immunize under these circumstances, it ought to offer almost perfect protection in general use. The occurrence of diphtheria in nurses protected against diphtheria at the Durand Hospital falls in three groups. From March 12, 1913, to Nov. 1, 1914, no specific prophylactic measures were used. During that period of twenty months, there were sixty-nine nurses on duty, nine of whom (13 per cent.) contracted diphtheria. Nov. 1, 1914, the Schick test was introduced. Those who had a positive Schick reaction were given a prophylactic dose of antitoxin when they went into the diphtheria service. From Nov. 1, 1914, to Jan. 1, 1921, the passive immunization was used. During this time, there were 298 nurses in training, sixteen, or 5.3 per cent., of whom contracted diphtheria. In 1921, toxin-antitoxin immunization was introduced. Not all nurses were immunized at that time, as the administration of toxin-antitoxin was optional with the nurse. It was so strongly advised that at present it is the exception for a nurse who does not have a negative Schick reaction to come on duty from any of the affiliated hospitals.

13. Dudley, S. F.: Special Report Series 75, Medical Research Council, 1923, p. 27.
14. Park, W. H.: New York State J. Med. **23**: 1 (Jan.) 1923.

To facilitate this testing, a member of our staff offers to go to the various affiliated hospitals to do Schick tests on all entering nurses. Most superintendents cooperate gladly with this plan. Nurses who have positive reactions, and who contemplate contagious training, are advised to have the toxin-antitoxin injections at least three months before entering the service.

The third period, Jan. 1, 1921, to Jan. 1, 1924, is that of active immunization by toxin-antitoxin. During this time there were 191 nurses on duty, of whom five, or 2.6 per cent., contracted diphtheria. Only one of the five had been immunized and was Schick negative. If the four who had not been immunized are discounted, active immunization has reduced the diphtheria rate among nurses to 0.53 per cent. There has not been a case of diphtheria among the nurses on duty in this hospital for more than eighteen months. The diphtheria rate among the nurses has fallen from 13 per cent. when no immunization was done, to 5.3 per cent. when passive immunization controlled by the Schick test was used, to 0.53 per cent. among those protected by toxin-antitoxin immunization.

SUMMARY

1. The various reports on the Schick test and toxin-antitoxin immunization done at the John McCormick Institute for Infectious Diseases have been summarized to date.

2. Schick tests on 808 persons, mainly nurses and medical students, gave 563, or 69.6 per cent., positive reactions and 245, or 30.3 per cent., negative reactions.

3. In a total of 651 persons whose residence was known, 363, or 79.9 per cent., of 454 classed as rural gave positive reactions; of 197 classed as urban, 100, or 50.7 per cent., gave positive reactions.

4. Of the 808 persons tested, 685 were females with 486, or 70.9 per cent., positive; 123 were males with seventy-seven, or 62.6 per cent., positive.

5. Two hundred and fifty-two young adults with Schick positive reactions have been given toxin-antitoxin injections. Of 156 returning for a final Schick test from three to six months later, 144 have become Schick negative and twelve have remained Schick positive.

6. Among seventy receiving the 3 L+ toxin-antitoxin mixture, there were eleven severe reactions; in fifty-seven receiving the 0.1 L+ dose there was one severe reaction. The immunizing property of the two mixtures is about equal.

7. Toxin-antitoxin immunization has reduced the diphtheria rate among nurses at the Durand Hospital from 13 to 0.53 per cent. The routine testing of prospective nurses and the immunization of those who were susceptible has practically removed diphtheria from the causes of sickness among nurses in a hospital devoted to treating contagious diseases.

637 South Wood Street.

Influence of Medicine on Natural Sciences.—As we trace the history of natural science through the centuries, we are confronted, at every stage, by the influence of medicine on its progress. The desire to alleviate human suffering, to repair the ravages of disease, and to mend the broken part, has served as a powerful stimulus to observation and experimental work. It soon became obvious to the would-be healers that to understand disease they must needs understand the healthy workings of the organism, and that pure science must precede applied.—Garrod, A. E.: *Lancet* **2**:846 (Oct. 25) 1924.

ANEURYSM OF THE SPLENIC ARTERY

OPERATIVE REMOVAL

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This case is reported because of the rarity of the lesion, and because it is the first recorded case of the successful treatment of an aneurysm of the splenic artery.

REPORT OF CASE

O. J., a man, aged 67, referred for operation by Dr. L. L. Merriman, had a movable, painless mass in the left side of the abdomen at about the level of the umbilicus, first noticed two days before, and without other signs or symptoms relevant to it. The mass seemed to be about 10 cm. in diameter, did not fluctuate, was easily pushed up beneath the rib margin, and promptly came down again when the patient stood up or inspired. Pulsation, thought to be transmitted from the aorta, was present. Under the fluoroscope, the mass was found to lie above the transverse colon and below the stomach. The blood Wassermann reaction was negative. The family history was without bearing on the case. A diagnosis of probable tumor of the mesentery or spleen was made.

Under ether anesthesia, a left rectus incision was made, which disclosed an aneurysm of the splenic artery presenting through the lesser peritoneal cavity, displacing the tail of the pancreas forward and mediad. Expansile pulsation became evident after the wall of the aneurysm was exposed. The afferent and efferent portions of the splenic artery were ligated, and the aneurysm was removed entirely. The abdomen was closed in layers. Convalescence was uneventful.

Laboratory examination revealed a saccular aneurysm, 10 by 8 by 9 cm. in greatest diameter, with mural thrombosis.

COMMENT

Aneurysms of the splenic artery are of relatively rare occurrence. In the table comprising 530 cases (Crisp) cited by Warfield [1] to illustrate the relative frequency of the occurrence of aneurysms in the various arteries of the body, there were no instances of aneurysm of the splenic artery. Osler [2] says: "I have twice seen small aneurysms of the splenic artery. Of thirty-nine instances of aneurysm of the branches of the abdominal aorta collected by Labert, ten were of the splenic artery." Garland [3] states that in more than 4,100 necropsies at the Massachusetts General Hospital, aneurysm of the splenic artery has been found three times. In the literature available to me, there are twenty-one cases on record.

There do not appear to be any signs or symptoms by which this lesion may be diagnosed other than those common to aneurysms in general. The antemortem diagnosis appears to have been made heretofore in but three cases: once by Högler,[4] whose patient later died of carcinoma of the pancreas; again by Smith,[5] who made the diagnosis at operation for severe intra-abdominal hemorrhage of unknown origin, and whose patient died two hours after operation; and lastly by Harnett.[6] Harnett's patient fell between an engine and the station platform. He was laid up for a month, and subsequently suffered attacks of pain in the left iliac fossa of several days' duration, with quiescent intervals; later he noticed a movable tumor in the same region, which could be pushed up beneath the ribs. At operation, there appeared to be an aneurysm in the

1. Warfield, in Tice's Practice of Medicine **6**, Sect. IV, p. 26.
2. Osler: Practice of Medicine, 1910, p. 865.
3. Garland, Joseph: Boston M. & S. J. **184**: 385 (April 14) 1921.
4. Högler, F.: Wien. Arch. f. inn. Med. **1**: 543 (Aug.) 1920; abstr., J. A. M. A. **75**: 1101 (Oct. 16) 1920.
5. Smith, W. R.: Case of Ruptured Aneurysm of the Splenic Artery, J. A. M. A. **80**: 1692 (June 9) 1923.
6. Harnett, W. L.: Indian M. Gaz. **57**: 457 (Dec. 9) 1922.

substance of the spleen. "The case appears to have been one of what was originally hematoma of the spleen, probably sustained at the time of the abdominal injury three years previously. The abdominal injury appears to have caused rupture of a splenic blood vessel, which led to the subsequent formation of the false aneurysm." In this case, splenectomy cured the patient. In the remaining cases, diagnosis has been made post mortem. Some have been symptomless, while in others the symptoms have been variable. Osler describes the case of a man, aged 30, who died following the rupture of an aneurysm into the colon. In this case the symptoms were vomiting, severe epigastric pain, and occasional hematemesis. The signs were deep seated tumor in the left hypochondiac region, the dulness of which merged with that of the spleen. There was no pulsation; it was thought on one occasion that a bruit was heard. The clinical diagnosis was gastric ulcer. Postmortem showed an aneurysm the size of a coconut, lying between the stomach and the transverse colon. In Högler's case, which has been mentioned above, the patient was a woman of 61 who suffered from agonizing pains in the lower spine, spreading like a girdle and down into the sacral region. The pain never subsided completely and was worse at night; there were periods of comparative relief, and the pains were somewhat mitigated by lying crouched on the right side. Auscultation revealed a systolic murmur above a pulsating tumor in the left upper part of the abdomen, and roentgenoscopy was also instructive.

In the case here reported, practically the only sign was that of tumor. Expansile pulsation was not recognized as such until the lesion was exposed.

25 North Tenth Avenue East.

ASCENDING RESPIRATORY PARALYSIS UNDER GENERAL ANESTHESIA*

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As a result of the inhalation of a general anesthetic, there develops a progressive ascending paralysis of the muscles of respiration, the extent of which provides a valuable indication of the depth of anesthesia. The muscles that are used in quiet respiration are the diaphragm, which carries on abdominal respiration; the levatores costarum and intercostales externi, which bring about costal inspiration, and the intercostales interni and triangularis sterni, which aid in expiration. All of these costal muscles are innervated by the intercostal nerves, originating in the twelve dorsal segments of the spinal cord. The diaphragm obtains its nerve supply through the phrenic nerve from the fourth cervical segment. An ascending paralysis will affect the costal muscles, innervated from the dorsal portion of the spinal cord, much sooner than the diaphragm, the nerve supply of which originates in the midcervical portion.

From the standpoint of the anesthetist, the abdominal respiration can be noted from inspection. The costal respiration is judged by placing the flattened tips of the fingers lightly on the chest, in the mammary line, on either side, midway between the nipple and the clavicle. In usual, quiet respiration, "the movement is fairly equally balanced between chest and abdomen, the abdominal being somewhat in excess."

TYPES OF RESPIRATION UNDER GENERAL ANESTHESIA

Under general anesthesia, the following types of respiration are to be noted:

Exaggerated Thoracic Type (T. +).—Inspiration is produced by expansion of the chest without movement of the diaphragm or abdominal wall, or with retraction of the abdominal wall. This type of respiration is rarely encountered during anesthesia if the airway is kept free. It has been noted in some cases in which inflammatory lesions affecting the peritoneum of the diaphragmatic region were present. In these cases, exaggerated thoracic respiration persisted throughout the operation.

Mixed, or Usual, Type (M.).—During inspiration there is a synchronous expansion of the chest and protrusion of the abdominal wall.

Delayed Thoracic Type (D. T.).—The chest expands during inspiration notably later in the respiratory cycle than occurs the contraction of the diaphragm.

Abdominal Type (A.).—Inspiration is brought about entirely by the contraction of the diaphragm, with protrusion of the abdominal wall but without movement of the chest.

Exaggerated Abdominal Type (A. +).—During each inspiration, the abdominal wall rises while the chest retracts. Expiration is marked by retraction of the abdominal wall and expansion of the chest.

These types of respiration, in the order given, result from a progressive ascending paralysis of the respiratory muscles. I will first note the occurrence of these types in the course of ether anesthesia.

METHOD OF ETHERIZATION EMPLOYED

For the benefit of any who may wish to repeat the observations, I will describe the method of etherization employed. The patient has a physical examination on the night before operation. To adult patients, a hypodermic of morphin, $\frac{1}{6}$ grain, and atropin, $\frac{1}{150}$ grain, is given, one-half hour before the time set for operation. Before the anesthesia is commenced, the patient is placed on the operating table as nearly as practicable in the required posture. A blood pressure cuff and stethoscope are applied to one arm. On a convenient chart, operative and anesthetic data are noted. The anesthesia is started with pure nitrous oxid gas. The inhaler is first carefully fitted to the face, with the gas bag filled but not distended and the air valve open. The change from gas to air is made without perception by the patient. Gas is administered until the patient is unconscious. Signs of deep anesthesia are never allowed to appear. During an expiration, the ether inhaler is substituted for the gas inhaler and fitted closely to the face. The ether inhaler is a 7 inch paper and towel funnel lined with a strip of polished metal. It contains a strip of fluffed gauze, 36 inches long and 18 inches wide. Before the inhaler is placed on the face, the gauze has been moistened with 2 drams of liquid ether. Ether is added at the rate of 3 drops a second for five minutes and afterward at a slower rate, in carefully measured amounts, throughout the operation. Mechanical obstruction of the airway is never permitted. Cyanosis is never allowed. Excitement is unusual. Such an exact method of measurement is essential to any valuable observations of the results of anesthesia.

* Read before the Eastern Society of Anesthetists, New York, Oct. 20, 1924.

TYPES OF RESPIRATION UNDER ETHER ANESTHESIA

At the commencement of the anesthesia, respiration is of the usual or mixed type. As anesthesia deepens, after a period of delayed thoracic respiration, the abdominal type appears. The change from mixed to abdominal respiration may be abrupt and, in this case, may be accompanied by some form of respiratory difficulty. Cessation of respiration, coughing, retching, or signs of excitement may occur at this time. When the change is gradual, the process is an interesting one to note. Each thoracic inspiration begins a little later in the respiratory cycle than the preceding one. Abdominal respiration continues without interruption. Thoracic inspiration is at first a trifle delayed. After a few inspirations, thoracic inspiration is found commencing midway in abdominal inspiration. A little later the thoracic inspiration is found still further delayed, and finally there comes an abdominal inspiration with no corresponding thoracic movement. Respiration of the abdominal type is then established and may continue throughout the anesthesia. If the anesthetic dosage is further increased, the paralysis of the costal muscles becomes more complete, and the condition of exaggerated abdominal respiration occurs. The costal muscles have become so relaxed that on inspiration the chest wall retracts rather than expands. This is an indication of profound anesthesia. If the anesthetic dosage is lessened, the costal paralysis will be diminished and the type of respiration will change from exaggerated abdominal to abdominal, from abdominal to delayed thoracic, and finally back to the usual type of respiration. This reverse change regularly happens at the close of etherization, so that within a half hour from the end of the operation the respiration is of the usual, mixed type. Respiration of the abdominal type may occur early or commence late in the course of the anesthesia.

In the series of cases that were studied for this paper, the type of respiration noted at the end of thirty minutes anesthesia was mixed in 37 per cent. of the cases, delayed thoracic in 12 per cent., abdominal in 28 per cent., and exaggerated abdominal in 23 per cent. The types of respiration vary constantly according to the anesthetic dosage. In this series of cases, mixed or delayed thoracic respiration corresponded with the second of Guedel's divisions of the third stage of anesthesia in 24 per cent. of the cases; with the third division, in 76 per cent. Abdominal or exaggerated abdominal respiration corresponded with the second division in 0.08 per cent.; with the third division, in 99.02 per cent. Mixed respiration persisted usually when a comparatively small amount of the anesthetic had been administered. When a large amount of ether had been used, the respiration regularly took on the exaggerated abdominal type. The type of respiration varied independently of posture, the rate of respiration, the pulse rate and the blood pressure reading.

EFFECT OF NITROUS OXID-OXYGEN

When nitrous oxid-oxygen without ether was the anesthetic, mixed respiration generally persisted, and the abdominal and exaggerated abdominal types were less frequently encountered. This is in accordance with our belief that nitrous oxid-oxygen affects the vital functions to a less degree than does ether when administered in considerable dosage.

INDICATION OF ANESTHETIC DOSAGE

As an indication of the actual depth of anesthesia, we can arrange the types of anesthesia in the following order, beginning with the lightest anesthetic zone:

1. Mixed or usual type.
2. Delayed thoracic type.
3. Abdominal type.
4. Exaggerated abdominal type.

Each of the types in this arrangement indicates a deeper plane of anesthesia than the one preceding. Even if the patient's muscle tone persists and relaxation is not sufficient for the surgeon's best work, exaggerated abdominal respiration is a sign of profound anesthesia. In operations in the region of the diaphragm, respiration of the exaggerated abdominal type is likely to impede the surgical work. The costal muscles are paralyzed by the anesthetic, and the whole respiratory burden must be carried by the diaphragm. Attempts to fix the abdominal muscles by retractors cannot be completely successful in this condition. The remedy is a smaller rather than a larger anesthetic dosage. Failure to realize this has sometimes resulted in the death of the patient from an overdose of the anesthetic without producing the desired condition of abdominal relaxation.

As an index to the depth of anesthesia, observations of the type of respiration are of special value as a direct indication of the effect of the anesthetic on a vital function; in fact, the vital function of greatest importance in anesthetic work.

131 Waterman Street.

Clinical Notes, Suggestions, and New Instruments

AN HEMATOCRIT METHOD*

C. M. Van Allen, M.D., New York

The hematocrit is an instrument by which is determined the volumetric relationship between corpuscles and plasma in a specimen of blood. Separation of the two elements is brought about in the centrifuge by virtue of a difference in their specific gravities.

The hematocrit method here described has proved satisfactory under extensive use in some experimental work. The technic is simple and is based on sound principles of operation; it requires a very small specimen of blood, whole or diluted, and employs the ordinary laboratory power centrifuge without special fittings. Because of the labor entailed in the elaboration and standardization of such an instrumental technic, a report of our instrument and the method of its use may be of value. A more detailed description will be given elsewhere, together with a study of the various technical factors which enter into the operation of the hematocrit and determine its reliability.

INSTRUMENT

The accompanying illustration represents the instrument ready for the collection of the blood specimen and, again, ready for centrifugalization.[1]

The hematocrit is a glass pipet with a chamber, somewhat similar in design to the hemacytometer pipet. It is 10 cm. in length over all, of which the shaft occupies 7 cm. The bore of the shaft is about 0.5 mm. in diameter and should be perfectly uniform throughout. The shaft ends bluntly at its lower extremity and is graduated from the tip up to

* From the Laboratories of the Rockefeller Institute for Medical Research, New York.

1. The instrument may be obtained from the Arthur H. Thomas Company, Philadelphia.

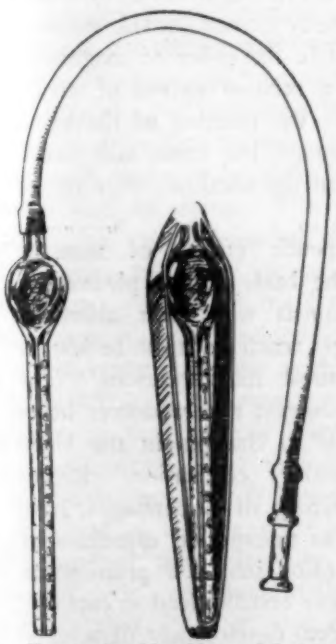
within a short distance of the chamber in a scale of 100 parts. The chamber is pear-shaped, larger end up, and has a capacity of about 1 c.c. The short length of tubing at the upper extremity of the pipet is also blunt tipped and serves for the attachment of the suction tube. The pipet is equipped with a rubber mouth suction tube. A rubber band, from 7 to 9 cm. in length and 1 cm. wide, is employed for the purpose of sealing the ends of the pipet after collection of the specimen.

METHOD

The hematocrit pipet is first prepared for use by attaching the suction tube. A free flow of blood on the skin surface of the ear lobe or finger tip is obtained by needle prick, and the first drop or two are discarded. As a fresh quantity appears, it is drawn up into the bore of the pipet shaft to the top of the scale. Blood that adheres to the outside of the pipet is now quickly wiped away, and a small quantity of an anticoagulant consisting of a stock 1.3 per cent. sodium oxalate solution is drawn with the specimen into the chamber of the pipet, about half filling it. Loss of fluid from the pipet is guarded against by placing a finger over the lower end of the tube bore, while the suction tube is removed and the pipet is enclosed from top to bottom with a rubber band, as illustrated in the drawing. No shaking or mixing of the specimen is necessary other than that which occurs inadvertently.

The pipet, thus adjusted, is placed in the centrifuge cup, shaft end down and properly counterbalanced, and centrifugalization is carried on at 2,700 revolutions per minute, or at any convenient rate above this, for about fifteen minutes. On removal of the pipet from the centrifuge at the end of this time, the volume reading of the red cell content is made directly, in percentage, from the shaft scale, by noting the upper limit of the mass of red sediment. No correction for dilution is needed.

In place of sodium oxalate as an anticoagulant, powdered herudin may be employed. For this purpose, a few grains of the powder are placed on the skin at the spot chosen for puncture. Mixture of the agent with the specimen takes place automatically as the blood wells up from the wound. A measured portion of this altered blood is secured in the hematocrit as described above, but the blood is allowed to remain without dilution in the shaft bore for centrifugalization. Rotation at 2,700 revolutions per minute for fifteen minutes should be sufficient to obtain a constant final reading.



Hematocrit with tubing and hematocrit with ends sealed by rubber band.

Precisely the same technic as the foregoing may be employed without any form of anticoagulant. Considerable haste is necessary, however, in order that the corpuscles may be separated from the plasma before clotting begins. The centrifuge must be directly at hand and all adjustments anticipated. This method probably gives the most reliable results, as there has been nothing introduced to disturb the osmotic pressure of the blood plasma.

READINGS

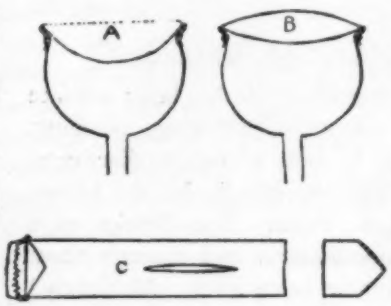
Our use of the hematocrit has been confined to rabbits, and several hundred determinations have been made on these animals, both normal and diseased. The average reading of relative corpuscle volume from forty normal rabbits is 39 per cent., with a maximum of 54 per cent. and a minimum of 33 per cent.

Normal hematocrit values for the human being as given by Gram and Norgaard[2] are probably the most accurate available. These investigators used herudin as an anticoagulant, and a capillary tube hematocrit in a specially constructed centrifuge head. Sedimentation was accomplished at 3,000 revolutions per minute for one and one-half hours. Their average reading for the male is 46 per cent., with normal variation between 42 and 50 per cent.; and for the female, 41 per cent., with variation between 39 and 43 per cent. The red cell volume may drop as low as 5 per cent. in anemia.

A SIMPLE, CHEAP, EFFICIENT GLYCERIN CAPSULE FOR POLYGRAPH

MORRIS H. KAHN, M.D., NEW YORK

To obtain good pulse waves from a polygraphic apparatus, the simplest method thus far devised is to use a glycerin capsule; i. e., the cup that is applied over the radial pulse is covered with two layers of rubber dam, between which is an amount of glycerin sufficient to bulge the membrane.



Cross section of simple glycerin capsule: *A*, glycerin; *B*, glycerin capsule; *C*, elastic tape strap slit to fit over edge of tube.

The apparatus can be made very simply at a cost of not more than 50 cents. All that is required is a thistle tube made of thick glass. This can be obtained for 15 cents at any chemical glass house. Over this is stretched one layer of thick rubber dam held in place by a rubber band. Suction is made and glycerin poured into the cup formation. Another piece of rubber dam is carefully put over this and firmly tied by another rubber band. A strap is made of a piece of elastic tape cut so as to slip over the lip of the thistle tube, and by means of a clasp it may be applied to the radial or brachial region.

The usual charges by the various manufacturers of polygraphs have been so exorbitant (from $15 to $35) that such a simple and adequate method is welcome.

140 West Sixty-Ninth Street.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

BENZYL FUMARATE-ABBOTT (See THE JOURNAL, July 5, 1924, p. 41).

The following dosage form has been accepted:

Tablets Benzyl Fumarate-Abbott, 5 grains.

SOLUTION PITUITARY EXTRACT-MULFORD (See New and Nonofficial Remedies, 1924, p. 229).

The following dosage form has been accepted:

Ampuls Solution Pituitary Extract-Mulford, 0.5 Cc.

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2. Gram, H. C., and Norgaard, A.: Relation Between Hemoglobin, Cell Count and Cell Volume in the Venous Blood of Normal Human Subjects, Arch. Int. Med. **31**: 164-170 (Feb.) 1923.

Contribution to Medical Progress.—Even the ordinary practitioner in the smallest village, far from hospital, laboratory or library, can, if he will, make some contribution to medical progress.—C. M. Jackson: *Science* **60**:229 (Sept. 12) 1924.

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SATURDAY, JANUARY 17, 1925

THE PHYSIOLOGY OF MASSAGE

The systematic manipulation of the body surface by the hands in movements of stroking, pinching, kneading and striking is not a recent discovery. Massage was employed therapeutically by the priests of ancient Egypt and of India. The Greeks were familiar with such manipulations, and through them the Romans adopted similar procedures. McKenzie [1] recalls that massage has had its eras of popularity and its seasons of neglect: popularity usually due to the personality and skill of an operator or school of operators, and neglect following its indiscriminate use by unskilled persons. According to McKenzie, its recognition as a therapeutic agent has been delayed by the failure to distinguish between true massage and unskilled rubbing that merely requires muscular strength, a certain manual dexterity, and good will. The proper practice of massage requires a special art. It differs radically from active exercise in its capacity to modify the condition of the muscular tissue without fatiguing or even employing the will power of the patient.

The physiology of massage, the understanding of precisely what functions the kneading of muscles affects in the organism, is closely related to the physiology of muscular exercise in general. It has been demonstrated, for instance, that the acid-base equilibrium may undergo striking changes if the exercise is vigorous; and these may occur often in the daily life of any active, healthy person. Barr [2] and his associates have observed the increase in the concentration of lactic acid after heavy work. This is sufficient to reduce the arterial carbon dioxid tension, and the reaction of both arterial and venous blood becomes less alkaline. The carbon dioxid combining capacity is greatly decreased. The degree of change varies considerably in different normal persons. The phenomena in general thus are characteristic of acidosis. The greater respiration during exercise and the attendant lowering of the carbon dioxid tension of the blood tend to oppose the effect of lactic acid on its reaction, but are not great enough, as a rule, for preventing the occurrence of some temporary acidosis or to cause an immediate return to normal when the muscular activity ceases.

A recent report by Pemberton, Cajori and Crouter [3] of the Presbyterian Hospital, Philadelphia, indicates that the form of "passive" muscular exercise represented by massage of voluntary muscles, even though vigorous, is not accompanied by the evidences of lactic acid production and acidosis that attend relatively mild active exercise of short duration. Nor does it bring about the loss of acid and the alkalosis that characterize therapeutic exposure of the body to external heat. The latter procedure, carried out in various ways, such as "bakes," hydrotherapy, vapor baths and mud baths, results in the familiar profuse perspiration. It has been pointed out that there occur also a heightened circulation, increased pulmonary ventilation, increased percentage saturation of the venous blood with oxygen resulting from increased blood flow, an increase in the alkalinity of the blood, an alkaline urine, and a change in the reaction of the sweat from its initial point to a reaction less acid or more alkaline. These changes in reaction are brought about by a loss of acid from the body, chiefly carbon dioxid, through the lungs, urine and sweat in the order of magnitude named, which results in a relative excess of alkali. This excess of alkali alters the reaction of the blood and is then eliminated through the urine and sweat, producing the swing toward the alkaline range in the fluids mentioned.[4]

As the possible therapeutic effects of massage cannot be explained on the basis of the phenomena of either acidosis or alkalosis with their attendant consequences, its physiologic reactions must be sought in other than such chemical manifestations. The Philadelphia investigators suggest that whatever benefits arise may be referable to changes in the blood supply, especially the capillary circulation. Recent studies, notably those of Krogh of Copenhagen, have tended to bring the hitherto unexpected capacities of the capillary bed for expansion into new prominence. Pressure or manipulation may actually lead to capillary dilatation. The freedom from development of acidotic conditions after massage, according to Pemberton, Cajori and Crouter, probably explains the application of this sort of manipulation to exercised, fatigued and even injured muscle. If massage produced additional amounts of lactic acid, the benefits to overexercised muscles would be difficult of explanation. Experience,

1. McKenzie, R. T.: Exercise in Education and Medicine, Philadelphia, W. B. Saunders Company, 1909.
2. Barr, D. P.; Himwich, H. E., and Green, R. P.: Studies in the Physiology of Muscular Exercise, I, Changes in Acid-Base Equilibrium Following Short Periods of Vigorous Muscular Exercise, J. Biol. Chem. **55**: 495 (March) 1923.
3. Pemberton, Ralph; Cajori, F. A., and Crouter, C. Y.: The Physiologic Effect of Massage, J. A. M. A. **83**: 1761 (Nov. 29) 1924.
4. Cajori, F. A.; Crouter, C. Y., and Pemberton, Ralph: Effect of Therapeutic Application of External Heat on Acid-Base Equilibrium of the Body, J. Biol. Chem. **57**: 217 (Aug.) 1923.

they add, has shown that massage, in the form of a vigorous rub-down, has a definite value to both human beings and horses after exercise. Lacking any further addition of lactic acid, the changes thus induced in the local blood supply permit, presumably, a more rapid removal of that already present.

CHEMICAL FEATURES OF MUSCULAR ATROPHY

Atrophy is a phenomenon that the physician may observe in a variety of tissues and under a diversity of conditions. The retrogressive changes that the uterine walls undergo after parturition afford an illustration of a truly physiologic or normal type of muscular atrophy. Senescence is assumed to be associated with atrophic changes that may lead to an irreparable weakening of some essential organ. In man, the senescent loss of body weight is believed to begin relatively early; but it proceeds very slowly, so that ordinarily it becomes notable only at an age in excess of the mean duration of life. Disuse of skeletal muscle groups also is attended with atrophy of the corresponding contractile tissue to a degree that may perhaps still be designated as physiologic. On the other hand, injuries leading to a degeneration of peripheral nerves, as well as certain types of lesions of the central nervous system, are liable to lead to a degree of muscular atrophy that is admittedly pathologic in extent, if not also in character.

The histologic features of the varied forms of muscular atrophy have long been studied. Connective tissue is found to increase, appearing more vascular and with more nuclei than in the normal. Adipose tissue also increases. The nuclei of muscle fibers themselves undergo marked proliferation, so that the sarcolemma tube may appear filled with nuclei in the late stages. As a rule, the fibers diminish in size, with an occasional hypertrophied fiber among them. There is a difference of opinion with regard to the persistence of the striae in voluntary muscle. Such descriptions permit, at best, only a vague understanding of the metabolic, or chemical, changes that attend the process under consideration. It is generally assumed to involve some sort of self-digestion of the tissue. Professor Bradley[1] of the University of Wisconsin, who has devoted much attention to the problems of autolysis, believes that atrophic changes in the mass of body tissues are brought about by chemical liquefaction of the tissue proteins, catalyzed by enzymes present in the cells. In the course of this liquefaction, the same products are formed that appear as the end-result of hydrolytic cleavage of protein by the enzymes of the digestive tract; namely, the peptids and amino-acids. By diffusing out into the blood and lymph, these products are removed and the cell or the tissue decreases in mass and in metabolism to a proportionate degree. In certain atrophies, digestion of the tissue proteins is further facilitated by the action of phagocytes; but even in these cases phagocytosis is a secondary process, and must be preceded by the initial steps of autolysis or postmortem changes, which produce chemotactic substances attractive to the phagocyte.

Voluntary muscle undergoes autolytic changes when it is removed from the body. The progress of such proteolysis is slow, and the change of the proteins is incomplete. It is influenced in large measure by the reaction of the tissue, the speed being increased in the presence of acids.[2] According to Bradley,[1] muscle in vitro autolyzes only about a fourth of its proteins under the most favorable conditions of reaction. The rest of the tissue is not hydrolyzed. It consists of connective tissues and muscle structural proteins, which are not rendered available for autolytic cleavage even by acidity. Chen and Bradley[2] have observed that the fraction of muscle tissue that is found to be susceptible of autolysis appears to be particularly associated with the contractile function of the tissue. An atrophy of a small part of the total muscle protein mass is accompanied by a disproportionately large loss of strength. They suggest that in prolonged excessive exercise and fatigue, sufficient acidity may develop in a muscle so that some of the contractile protein fraction is lost by autolysis. This may be a factor in determining the length of time required for complete recovery of strength from such excessive fatigue.

In the studies at Wisconsin in this field, Chen, Meek and Bradley[3] have undertaken the investigation of muscles that have undergone atrophy of varying degree after section of their motor nerves. Comparing the loss of tissue in atrophy with digestion of comparable tissue by autolysis, they were impressed with the small extent of autolysis, as compared with atrophy. In two weeks the living muscle loses 20 per cent. of its mass in atrophy. In the same period, normal muscle tissue digests less than 10 per cent. of its proteins to amino-acid under the most favorable hydrogen-ion concentration. This figure seldom goes above 15 per cent. after prolonged digestion. In the same time, the living muscle may lose 50 per cent. or more of its protein mass. Evidently, in the atrophic digestion of muscle, originally unavailable proteins are gradually converted into "potentially available substratum" for removal by autodigestive changes. Chen, Meek and Bradley admit that it may be acted on by outside enzymes, such as those derived from lymphocytes. The histologic evidence, however, lends little support to the idea, for in the great majority of sections of atrophic muscle examined, there was no evidence of lymphocytic invasion. It is believed that the increase of connective and adipose tissues in atrophied muscles

1. Bradley, H. C.: Autolysis and Atrophy, Physiol. Rev. **2**: 415 (July) 1922.

2. Chen, K. K., and Bradley, H. C.: Studies of Autolysis, X, The Autolysis of Muscle, J. Biol. Chem. **59**: 151 (Feb.) 1924.

3. Chen, K. K.; Meek, W., and Bradley, H. C.: Studies of Autolysis, XII, Experimental Atrophy of Muscle Tissue, J. Biol. Chem. **61**: 837 (Oct.) 1924.

is a compensatory invasion from intermuscular septums and is a phenomenon secondary to the atrophy of the muscle itself. As the Wisconsin investigators further point out, where the nerve regenerates, the atrophied muscle increases in mass, and contractile power is regained. The essential machinery of the muscle has not disappeared, and hypertrophy, the reversal of the atrophic change, goes on.

A NEW INDEX OF INTESTINAL PUTREFACTION

More than one scientist has inquired as to the possible biologic significance of the fact that the digestive tract usually teems with bacteria. Pasteur even thought that these microbes are in some way essential to the physiologic welfare of the individual who harbors them, an idea long included in the problem as to whether or not bacteria are essential to life. If the material for examination is taken from the lowest portions of the bowel, many of the micro-organisms can be shown by suitable cultural methods to be no longer living; but, as a bacteriologist has remarked, even the dead and dying bacteria point to the multiplicity of bacterial life at the higher levels of the intestine. There are, indeed, regions in which these organisms compete with their host for the nutrient pabulum represented by the unabsorbed products of digestion. Hence it has been remarked that the ileum is "the debatable land of digestive territory."

Bacterial life implies chemical changes in the encompassing mediums. Products of fermentation and putrefaction arise; and this is true of the interior of the bowel as well as of the bacteriologist's culture tubes. To review the problems of intestinal putrefaction would require a discussion of an enormous variety of clinical manifestations that have at one time or another been put into relation with the alimentary microbes. Not infrequently we should be left in the midst of extreme conjecture or a halo of uncertainties such as has enveloped the subject of autointoxication. Outspoken microbiotic changes in the bowel betray themselves in ways that scarcely call for refined technic of investigation; but there are less striking conditions in which it has seemed eminently desirable to secure some index of the actual extent of intestinal putrefaction.

Various tests, of which the indican reaction in the urine is probably the most prominent, have been recommended, not without considerable justification, to furnish evidence regarding the bacterial conditions in the bowel. In criticizing the indican test a recent writer has properly remarked that, in the first place, there is no satisfactory method for the determination of indican. Secondly, an unknown amount of the indol produced in the intestine is destroyed within the body, and the amount so destroyed is probably not constant, at least for different individuals. Nor is a constant amount of the indol formed absorbed from the intestines. Indol is formed from tryptophan, and is dependent on the amount of this amino-acid in the diet. Further, in some severe forms of intestinal putrefaction, little indol may be produced. Phenol and conjugated sulphate determinations have not proved more satisfactory.

It is of no small interest, therefore, that Bergeim,[1] working at the University of Illinois College of Medicine, has found a simple method for estimating reduction processes in the intestine by a determination of the amount of unreduced ferric oxid found in the feces after ingestion of a definite amount of this substance. The reducing products found in the intestine are essentially of bacterial origin. The absence of oxygen from the intestinal lumen presumably favors the growth of obligate anaerobes, among which are organisms of putrefaction responsible for the formation of those products which are considered chiefly responsible for the toxemias of intestinal origin. Furthermore, as Bergeim notes, it is reasonable to suppose that to the extent that the reducing substances found in the intestine are of bacterial origin, their estimation will give an index of certain types of bacterial action there.

As yet only the applications of the new technic, which promises to be of "clinical simplicity," to animals resembling man in their alimentary functions have been reported. They show that reduction takes place almost entirely in the cecum and large intestine, and is therefore closely related to the processes of intestinal putrefaction of proteins that predominate in the lower bowel. Hydrogen sulphid is a substance concerned in this reduction process. In harmony with earlier studies, it was observed that various antiseptics tested failed to produce any permanent decrease in reduction. Intestinal stasis led to marked increase in reduction. Abundance of the ordinary carbohydrates, starch, sucrose, glucose, fructose and maltose, had little effect in diminishing reduction. Dextrin and lactose produced the characteristic alteration of the intestinal flora to an aciduric type, and intestinal reduction was markedly diminished.

This is enlightening, since attempts made by employing the indican determination to show a decreased intestinal putrefaction on these diets or on diets containing also cultures of *Bacillus acidophilus* have been inconclusive, in spite of the undoubted therapeutic results obtained. In Bergeim's observations, milk retains its preeminence from the standpoint of depressing the production of reducing substances of bacterial origin in the bowel. Its recognized value in decreasing alimentary putrefaction and the comparable properties of casein and lactose are amply confirmed. What Bergeim's method may mean in the treatment of human disorders remains to be determined.

1. Bergeim, Olaf: Intestinal Chemistry, I, The Estimation of Intestinal Reductions, J. Biol. Chem. **63**: 45 (Nov.) 1924; II, Intestinal Reductions as Measures of Intestinal Putrefaction, with Some Observations on the Influence of Diet, ibid., p. 49.

Current Comment

ANNUAL DUES NOW PAYABLE

In the December 13 issue of THE JOURNAL, a remittance slip for subscription and Fellowship dues was inserted. A large percentage of subscribers and Fellows have responded. For those who have overlooked the slip, another is enclosed in each copy of this week's issue. It may be disregarded by all who have remitted with the former enclosure or whose 1925 dues were already paid in advance. A new feature of the slip this year is the inclusion of the names of the six special journals published by the Association: *Archives of Internal Medicine, American Journal of Diseases of Children, Archives of Dermatology and Syphilology, Archives of Neurology and Psychiatry, Archives of Surgery,* and *Archives of Otolaryngology.* In remitting Fellowship and JOURNAL subscription dues, it will be found convenient to include subscriptions to any of the special journals desired. *Hygeia,* a Journal of Individual and Community Health, is also included. As the voice of the Association in addressing the general public, *Hygeia* should occupy the most prominent place in the physician's waiting room. Prompt attention to the remittance slip will be greatly appreciated, and will save the Association the expense of sending out personal statements.

THE EYES OF YOUTH

Among the categories of physical impairment that formed the basis of rejections of young men from service by the draft boards in this country during the World War, defective eyes had noteworthy prominence. In a group of army candidates examined in Detroit, Brooklyn and New York, for example, 29 per cent. in all were rejected; among them the largest number, 6 per cent., showed unacceptable conditions of the eyes.[1] The widespread use of glasses in many communities and the unauthentic gossip among the school population, taken in connection with the facts just recited, tend to give the impression that our eyes, considered as physiologic and optical mechanisms, fall far short of the perfection that we are wont to expect of the human organism. Perhaps we have become unduly pessimistic. In recent tests made by officers of the United States Public Health Service[2] for defective vision on approximately ten thousand schoolchildren in four Eastern localities, 63 per cent. of these young persons, ranging in age from 6 to 16 years, were found to be normal in both eyes; only 10 per cent. had rather poor vision in one or both eyes. Nature's equipment of man for vision is therefore not as imperfect as a hasty guess might suggest. It should be recalled, furthermore, that the eyes are among the organs most commonly strained in modern life. The eye is almost constantly focusing at a short distance. A hygienist[3] has recently reminded us that the eyes of man developed to perform a function that has been greatly changed in modern civilization. The invention of Gutenberg has thrown enormous strain on the eye by requiring it, in reading the printed page, to make many more movements than are ever called for in the environment of large objects. Many eyes are unable to make this adjustment. We should not blame Nature unduly for the results of man's extreme zeal in the directions of modern modes of life.

1. The figures are taken from Fisher, Irving; and Fisk, E. L.: How to Live, New York, Funk and Wagnalls, p. 398.
2. Collins, S. D.: The Eyesight of the School Child as Determined by the Snellen Test.
3. Williams, J. F.: Personal Hygiene Applied, Philadelphia, W. B. Saunders Company, 1922.

ANTHRAX

Zoologically, anthrax is said to be the most widespread of infectious diseases. Many species are susceptible to it, and the malady has been found to occur in various parts of the world and in a large range of climates. The responsible micro-organism is one of the best studied bacteria, and its pathogenic nature has long been clearly recognized. Both man and animals are liable to be involved through the dissemination of the extremely virile infectious matter by which anthrax is transmitted; hence control is not so easy as in the cases in which only one species is likely to be attacked. Within the last few years, attention has been directed anew to the menace of anthrax in man, particularly through the distribution of inadequately sterilized products made from hairs of affected animals. In a resolution adopted by an advisory committee on anthrax, which met in London about two years ago,[1] the members voiced the opinion that in most countries the principal danger of industrial anthrax arises in the manipulation of hides and skins, and recognized the impossibility of securing at that time complete disinfection to protect against this danger. Somewhat earlier, the authorities of the New York City department of health were stimulated to adopt more stringent measures for suppression and control of the disease. These measures consisted in: (1) the enactment of regulations regarding sterilization of all animal hair to be used in brushes or hair cloth, and requiring manufactured hair products to be identified by trade-marks or the manufacturer's name; (2) in tracing the source of infection and seizing and destroying or disinfecting infected material, and (3) public health education, by which means the worker, the employer and the public generally were informed concerning anthrax. The outcome seems to have been a fortunate one; for, according to a recent report,[2] the number of cases occurring in the region that earlier gave cause for alarm has since declined. Whereas there were twenty-four cases in New York City in 1920, in 1921 only nine cases were reported; in 1922, eight cases; in 1923, six cases; and only one case was reported for the first six months of 1924. The importance of this is emphasized still further when it is recalled that nearly one third of the persons affected have died. A careful investigation of the sources of infection of more than sixty cases showed two main sources of infection: first, animal hair or articles made from animal hair; second, animal hides,

1. The Advisory Committee on Anthrax, Miscellany, J. A. M. A. **80**: 500 (Feb. 17) 1923.
2. Report on Sixty-One Cases of Human Anthrax in New York City, 1919-1923, Pub. Health Rep. **39**: 2523 (Oct. 3) 1924.

skins, or articles made from animal hides and skins. No less than thirty-two persons were infected by shaving brushes. In the light of all the known facts, it is desirable that a false sense of security shall not be cultivated because of the prevailing dearth of human infections.

Association News

THE ATLANTIC CITY SESSION

Local Committee of Arrangements

Dr. Clarence L. Andrews, 1801 Pacific Avenue, Atlantic City, on nomination of the Atlantic County Medical Society, has been chosen as chairman of the Local Committee of Arrangements for the Atlantic City Session of the American Medical Association. The names of other members of this committee and of its subcommittees will be published later.

Arrangements are being perfected as speedily as possible for the Seventy-Sixth Annual Session of the American Medical Association, to be held in Atlantic City, May 25-29. The Registration Bureau, Scientific Exhibit, Technical Exhibits and Motion Picture Theater will be located on the Steel Pier. All sections will meet in halls in hotels as centrally located as possible.

The Scientific Exhibit

The Committee on Scientific Exhibit is desirous that the exhibits shall be presented in a way that will emphasize their scientific value. This may be done by carefully worded explanatory placards, but particularly by personal demonstration. (The committee requires that all booths shall be in charge of a competent demonstrator.) The committee points out that the general attractiveness of the exhibit is essential; the committee will do its part by having the booths decorated appropriately. The total amount of space available for exhibit purposes is approximately the same as that of last year (10,000 square feet). From the interest already manifested in the next Scientific Exhibit, it is evident that large blocks of space cannot be assigned to individual exhibitors.

A fully equipped Motion Picture Theater for talks illustrated with lantern slides or motion pictures will be an adjunct of the Scientific Exhibit; it will be located on the second floor of the Casino at the entrance of the Pier.

The committee will make no assignments previous to March 20, in order that the amount of space available may be apportioned to the best advantage of all concerned. All applications must be received before this date. Those desiring application blanks should send in a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

Diphtheria Campaign in Ohio.—The state department undertook, in 1921, a campaign against diphtheria. The plan comprised (1) publicity concerning the facts; (2) broadcasting information concerning the Schick test and immunization; (3) an intensive effort to immunize, and (4) an attempt to place the responsibility for every death from diphtheria. Public interest was aroused through the press, and new methods of diphtheria prevention were explained before forty county medical societies. All health commissioners in the state were instructed, and participated in Schick testing and toxin-antitoxin administration. The actual work began last January, since which time more than 130,000 children have received the Schick test, and more than 70,000 have been immunized. There are still probably more than 750,000 susceptible school children in the state, not mentioning the large number of preschool children who need protection. The concerted plan against this disease will be pushed until diphtheria is no longer an important cause of death in Ohio.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Special Tax for Medical School Proposed.—In a bill prepared at the request of officials of the University of Arkansas Medical Department, Little Rock, it is proposed to levy a tax on certain luxuries, soft drinks, candies, cosmetics, chewing gum and amusements, for the benefit of the medical school's proposed building program. This would produce, it is reported, more than $150,000 a year for this purpose. The present medical school building is said to be not only inadequate but unsuitable.

Hospital News.—The new $400,000 Baptist State Hospital, Little Rock, was turned over, January 1, to a group of local physicians who will jointly conduct a clinic to be known as the Baptist State Hospital Clinic. Dr. Joseph P. Runyan, who has been appointed general manager and chief of staff of the new institution, will close his private hospital known as St. Luke's, moving patients and the entire staff into the new institution, which will not be confined to any particular group but be open to all physicians in good standing.——A $62,000 building has been presented to the trustees of the Arkansas Tuberculosis Sanatorium, Booneville, by the Masons of this state, to be used for caring for tuberculous children. It has a capacity of forty-four and will be maintained by the state, the superintendent of the sanatorium being in charge.——The John E. Brown College, Siloam Springs, recently opened a hospital for students and the public.

CALIFORNIA

Examination of Preschool Children.—In twenty of the fifty-eight counties in California, preschool children are given physical examinations. The state board of health, the state board of education, the local physicians and various organizations assist in this work.

Society News.—At a business meeting preceding the eighth annual dinner dance, Bakersfield, Dec. 18, 1924, the Kern County Medical Society elected Dr. William H. Moore, president; Dr. Alexander R. Moodie, vice president, and Dr. Keith S. McKee, secretary-treasurer.

COLORADO

Professional Building.—An organization composed entirely of physicians and dentists, the Imperial Building Association, is having plans drawn for a six story building to be erected in Denver on the six lots adjoining the Imperial Building, a professional building, which the association owns.

Personal.—Dr. William Whitridge Williams, Denver, has been appointed a member of the state board of medical examiners to succeed the late Dr. Alexander O. Magruder.——Dr. William H. Halley has been elected president of the Denver General Hospital; Dr. Clough T. Burnett, vice president, and Dr. Louis V. Sams, secretary.

Hospital News.—The Swedish National Sanatorium, Denver, recently dedicated a $200,000 building.——The Methodist Church proposes to erect, at Colorado Springs Sanatorium, buildings costing $2,000,000, of which the present Beth-El Hospital will be a unit.——The new Colorado State Hospital, Denver, recently opened, has 150 beds; the Psychopathic Hospital with eighty beds will open in the near future.

ILLINOIS

Naprapath Fined.—C. Edward Barnett, naprapath, Belleville, was fined $100 and costs, January 2, in the county court, for practicing without a license, it is reported.

Personal.—Dr. Bartlett C. Shackford, for several years the head of the pathologic laboratory of the Decatur and Macon County Hospital, tendered his resignation, effective January 1, to become head of a laboratory in Los Angeles.——Margaret B. MacDonald, Ph.D., associate and research professor of biochemistry, School of Hygiene, Johns Hopkins University, Baltimore, is visiting the University of Illinois for the year and doing research work on the biochemistry of yeast.

Chicago

Society News.—The Chicago Council of Medical Women will meet, January 27, at 40 East Erie Street. The subject will be hemorrhage with particular reference to surgery. Physicians are cordially invited.

Personal.—Dr. Dean D. Lewis addressed the Sioux Valley Medical Association, Sioux City, Iowa, January 20-21, on "Infections"; Dr. Isaac A. Abt, on the "Treatment of Diphtheria and Scarlet Fever," and Dr. Albert H. Andrews on "Fifth Nerve Manifestations."——Dr. Hugh T. Patrick addressed the Tippecanoe County Medical Society, Lafayette, Ind., January 7, on "Differential Diagnosis of Functional and Organic Diseases of the Nervous System."

Hospitals in Chicago.—The Council on Medical Education and Hospitals, American Medical Association, has just compiled data on hospitals in Chicago. The total number in the city is ninety-nine, of which sixty-seven are general hospitals; seven, maternity; four, nervous and mental; four, convalescent; four, industrial; three, isolation; three, tuberculosis, and one each of the following: pediatric; orthopedic; eye, ear, nose and throat; urologic; alcoholic and drug; incurables, and U. S. Marine. The total number of beds in these hospitals is 14,645, and the average number of patients in them, 10,398, making the percentage of beds occupied 71. The hospitals vary in size from 2,500 beds (Cook County Hospital) to seven beds.

INDIANA

Society News.—At a meeting of the Indianapolis Medical Society, January 6, Dr. Joseph R. Eastman was elected president; Drs. William S. Tomlin and Clarence R. Strickland, vice presidents, and Dr. Lyman R. Pearson, secretary-treasurer.

Bill to Allow County Health Officers.—The state board of health will sponsor a bill in the next legislature designed to permit counties and cities of 50,000 or more persons to have all full-time health officers, public health nurses and sanitary inspectors, to be provided from public funds. The state board does not desire a compulsory law, but one that will permit a county health organization.

Gift for Woman's Hospital.—It was announced, January 7, that Mr. and Mrs. William H. Coleman, Indianapolis, have given $250,000 to Indiana University for a woman's hospital. This is in addition to $75,000 given to the school of medicine last June for the endowment of three chairs, and is in the form of a memorial to a daughter of Mr. and Mrs. Coleman. The new hospital will be erected on the medical school campus, Indianapolis.

Plans for Medical School.—Trustees of Indiana University, members of the Riley Memorial Association, and commissioners of the Indianapolis Park Board are planning a 100 acre wooded park, in part a gift of the city of Indianapolis, surrounding the medical school building, the Long Hospital, the City Hospital and the Riley Memorial Hospital. The expansion program includes also the construction on this tract of a psychopathic hospital, additional wards for the Robert W. Long Hospital, a maternity hospital, an outpatient's building, a clinical building and among other buildings, a nurses' home, the total cost of which is estimated at $2,650,000, all to be completed within a period of ten years.

MARYLAND

Influenza Among Firemen.—An epidemic of influenza has broken out in the fire department of Baltimore. Sixty men are ill, according to the report of one of the department physicians. There are more cases of influenza now in the department than there were during the epidemic of 1917-1918. The disease is mild and the outbreak has not crippled the service of the department.

Physicians' Building Approved.—The erection of an eight-story office building for physicians and dentists at the southwest corner of Cathedral and Richmond streets was approved by the board of zoning appeals of Baltimore recently. The application covering the project, reported to involve an expenditure of $1,150,000, was made by the Physicians and Surgeons' Building, Inc. The building will be of the Gothic style and will contain more than 200 offices.

Negro Death Rate.—During 1924, the negro death rate for the city of Baltimore was almost double that for the white population, according to the report of the city health department. The death rate for negroes was 22.60 per thousand population and that for white persons 12.75. For the same period, the negro birth rate was 28.13 per thousand population and that for the white population was 22.06. There were ninety suicides during the year, seventy-six homicides, and 664 deaths due to injuries received in accidents.

Personal.—Raymond Pearl, Ph.D., of the Johns Hopkins University School of Hygiene and Public Health, Baltimore, addressed the Royal Canadian Institute, Toronto, Dec. 6, 1924, on "The Experimental Study of Life Duration."——Francis Metcalf Root, Ph.D., associate in medical entomology, Johns Hopkins University School of Hygiene and Public Health, Baltimore, has gone to Brazil, to study the mosquitoes of that country. Dr. Root was lent to the International Health Board of the Rockefeller Foundation for this research.

MASSACHUSETTS

Dr. Shea Sentenced.—Dr. Alfred D. Shea, Cambridge, has been convicted and sentenced to serve from eight to ten years in the state prison for performing illegal operations, it is reported. Dr. Shea, now nearly 70 years of age, was convicted on a similar charge several years ago but was pardoned after serving a small part of his sentence.

Change in Surgical Services.—The trustees of the Massachusetts General Hospital, Boston, have voted to reduce the number of surgical services from three to two. Dr. Daniel F. Jones will be chief of the East Surgical Service and Dr. Edward P. Richardson, chief of the West Surgical Service, which will be devoted largely to research and teaching. Dr. Charles A. Porter will be surgeon-in-chief of both services, but without active executive duties.

Society News.—Dr. Charles W. Eliot, president emeritus of Harvard University, addressed the students of Harvard Medical School, Dec. 15, 1924, on "Public Health Service."——At a meeting of the Greater Boston Medical Society, Boston, Dec. 9, 1924, among others, Dr. Milton J. Rosenau spoke on "Infantile Paralysis," Dr. Ernest G. Crabtree on "Prostatic Surgery at the Beth Israel Hospital" and Dr. Roger I. Lee on "Atypical Leukemias."

Report of Committee.—The committee of three members of the senate and six members of the house, appointed to study every aspect of the various divisions of registration in this state, has submitted its report. The committee opposes the recognition of chiropractors and midwives. It recommends for the general control of the boards of registration there shall be a board of registration within the department of civil service and registration, comprising seven persons appointed by the governor. The existing boards shall be known as examining boards under the supervision of the board of registration, and they shall report the results of their activities to the latter board. Certificates of registration shall be issued by the board of registration, which controls the financial affairs of the division and fixes the compensation of the examining boards, with the approval of the governor and council. The position of director of registration is to be abolished, and five inspectors are asked for the purposes of investigation. The *Boston Medical and Surgical Journal* says that aside from the general features of these recommendations, the great outstanding requirement is that of giving to the board of registration the authority to determine which are approved medical schools. The requirement that the board of registration may accept only applicants who are graduates of colleges approved by the board will be the storm center when the report is considered by the legislature, because "it will arouse the opposition of those who have for many years induced the legislature to decline to enact laws which would enable the state to take its proper position among the great majority of the states of the nation." There is, however, a reasonable prospect for legislation which will lift Massachusetts out of the position of endorsing inadequate medical education.

MICHIGAN

Postgraduate Conferences.—The executive committee and secretary of the Michigan State Medical Society are making arrangements for a series of postgraduate conferences to be held in each of the councillor districts of the state. The committee has a definite plan, the fundamental purpose of which is to provide programs which deal primarily with scientific advancements in medicine and recognized methods of diagnosis by modern methods. Modern methods of treatment will be stressed in the second conference planned for each district. Conferences have already been held at Traverse City, Port Huron and Niles, and tentative dates for others up to April 16-30, the date of the Detroit con-

ference, have been arranged. Four thousand people, of whom 165 were physicians, have come in direct contact with the activities of the Michigan State Medical Society extension work by virtue of the first three conferences.

Society News.—At the annual meeting of the Mecosta County Medical Society, Big Rapids, Dec. 19, 1924, Dr. Gordon H. Yeo was elected president; Drs. Benjamin L. Franklin, Remus, and Morley L. Teeple, Morley, vice presidents, and Dr. Donald MacIntyre, Big Rapids, secretary-treasurer.——At the annual meeting of the Saginaw County Medical Society, Saginaw, Dec. 17, 1924, Dr. David E. Bagshaw was elected president; Dr. William F. English, vice president; Dr. Frederick J. Cady, secretary-treasurer.——The Ingham County Medical Society, Lansing, Dec. 19, 1924, elected Dr. William G. Wight, Yale, president; Dr. Fred L. Seger, Lansing, vice president, and Dr. Horace L. French, Lansing, secretary-treasurer. It was decided, it is reported, to increase the dues to $20 a year. At the banquet, one of the largest medical gatherings, it is said, in the history of the city, Dr. J. Earl McIntyre, retiring president, was toastmaster.——Dr. George W. Crile, Cleveland, addressed the Academy of Surgery, Detroit, Dec. 13, 1924, on the newer problems of gastro-intestinal surgery.——The recent annual meeting of the Kalamazoo Academy of Medicine completed forty-one years of activity as an incorporated society. Of the original charter members of the academy only one survives, Dr. Charles H. McKain, Vicksburg, who is still actively engaged in practice and interested in the academy. Of the ten meetings held during the year, one was in South Haven, one in Vicksburg, the others in Kalamazoo. Three clinics were held, all well attended.

MINNESOTA

Smallpox in Minneapolis.—It is reported that thirteen new cases of smallpox and ten deaths occurred in Minneapolis in the forty-eight hours ending 9:30 a. m., Dec. 26, 1924, at which time there were 265 cases in quarantine.

Plans for Medical School.—The regents of the University of Minnesota have appointed a special committee of physicians to raise money for the construction of medical buildings. They want to raise now about $600,000 for a nurses' home. It is proposed also to construct a psychopathic unit, $250,000; to complete the institution of an anatomy building, $450,000; to erect a woman's unit, $450,000; an addition to Millard Hall, $250,000, and a pediatric unit, $250,000. The plan under consideration would probably entail shifting buildings and equipment and transferring activities from one building to another more adaptable for the purpose.

MONTANA

State Board Appointments.—Dr. George M. Jennings, Missoula, has been appointed a member of the state board of health for the term ending April 2, 1929, to succeed Dr. Daniel J. Donohue, Butte; and Dr. John A. Donovan, Butte, has been appointed a member of the board of medical examiners for the term ending March 2, 1931, to succeed Dr. Herbert H. Judd, Bozeman.

NEBRASKA

Society News.—At a meeting of the Lancaster County Medical Society, Lincoln, Dec. 6, 1924, Dr. Edward W. Rowe spoke on "Roentgen-Ray Interpretations of the Upper Gastro-Intestinal Tract," and a moving picture film of the "Complex Motor Phenomena of the Human Stomach, Cap and Duodenum," prepared by Dr. Lewis G. Cole, New York, was shown.

License Revoked.—According to the *Nebraska State Medical Journal*, Dr. Charles A. Flippin, Grand Island, an aged colored physician, had his license to practice medicine revoked by the state board of health recently for conduct involving moral turpitude, to which he pleaded guilty. It is said that 3,000 persons signed a petition requesting the board not to revoke the license.

NEW JERSEY

Society News.—At the annual meeting of the Mercer County Medical Society, Trenton, Dec. 10, 1924, Dr. Daniel L. Haggerty was elected president, Dr. John B. Comfort, vice president, Dr. Alfred D. Hutchinson, secretary, and Dr. Harry R. North, treasurer.

Board of Health Abolished.—The rights and duties hitherto exercised by the board of health of Montclair will in the future be vested in the department of public affairs, the change having been made on recommendation of the board of health. The position of director of health has been created, and Dr. William H. Areson appointed director.

NEW YORK

New Water Supply for Oneida.—Having recently completed the installation of a modern sewage disposal system, Oneida voted at a special election, Dec. 12, 1924, to construct an aqueduct to bring water to the city from the Florence Creek watershed, 22 miles to the north. This will cost $1,500,000, but will provide an adequate quantity of soft water. Oneida now has one of the hardest waters in the state.

The Govenor's Message.—Governor Smith, in his inaugural address, stated that he was convinced that there is a grave menace to public health in this state in the very large number of persons practicing medicine within the meaning of the law without being licensed or qualified. This, he said, should not be a political or a partisan matter. "I earnestly hope that the present legislature will give this careful consideration and enact legislation which will justly and effectively guard the public health and strengthen and enforce the Medical Practice Act." At every point, Governor Smith pledged his support to the extension of health and hospital work in New York.

Typhoid Fever Conference.—A conference was recently held at the New York office of the state department of health to consider the typhoid fever outbreak. Among those present were representatives of the State Conservation Commission, which has jurisdiction over the certification of oyster beds in the state; the health commissioners of Buffalo, Syracuse, Rochester, and other cities; the state commissioner of health; representatives from the New York City Department of Health, and from the shellfish industry. It was generally agreed, it is reported, that while there has been no direct proof that shellfish are responsible for the increase of typhoid fever within the state, circumstantial evidence strongly indicated that this is a fact. A statement was issued signed by the state health commissioner and the health commissioner of New York City recommending that as an emergency measure to protect the health of the people from a possible source of infection all shellfish be thoroughly cooked before they are eaten, pending a definite determination of the cause of the outbreak.

New York City

Governor Pardons Chiropractor Meyer.—Governor Smith granted a pardon, January 7, to Ernest G. Meyer, chiropractor, 458 Seventy-Seventh Street, who was sentenced last April to one year in Sing Sing penitentiary for manslaughter, in connection with the death of a patient from diphtheria.

Performance for Destitute Russian Physicians.—A performance was given at the Manhattan Opera House, Dec. 28, 1924, by Jascha Heifetz for the benefit of physicians who fled from Russia because of their opposition to bolshevism, and who are now destitute in various European countries. The receipts of the performance, which was under the auspices of the World Relief Conference, probably will exceed $10,000.

Hospital Building Fund.—Mr. and Mrs. Middleton S. Burrill have given $72,000 to the Presbyterian Hospital Building Fund, the largest single contribution thus far made, making the total now $1,175,323. Bids are being received for excavation work, and construction will begin, it is expected, the early part of this year. The first contracts in connection with the construction of the medical center have been awarded to Post & McCord for the steel work of the new Presbyterian Hospital and the new college of physicians and surgeons.

Lectures on Preclinical Signs of Disease.—A symposium on the preclinical signs of disease with special reference to the management of the health examination is being given under the auspices of the Medical Society of the County of New York committee on periodic health examination, at the New York Academy of Medicine, Tuesday and Thursday afternoons, from January 6 to February 3. The committee on medical education of the New York Academy of Medicine, of which Dr. Charles N. Dowd is chairman, is cooperating. Dr. Orin Sage Wightman is chairman of the committee on periodic health examination of the county society.

Hospitals Need Funds.—The United Hospital Fund has issued a statement showing that during 1924 hospital care in the fifty-seven nonmunicipal hospitals that are members of the fund cost $4,500,000 more than patients paid. Twenty-four per cent. of the patients were treated free. Patients who received 51 per cent. of the hospital service paid only

36 per cent. of the income, while patients who received 25 per cent. of the hospital service paid 64 per cent. of the income. One out of every four of the 200,000 patients cared for by the fifty-seven United Hospitals last year was dependent on public philanthropy to see him through an illness. Nearly 750,000 persons came to the United Hospital dispensaries for service for which they could not afford to pay a private practitioner.

Vital Statistics for 1924.—A report submitted by the registrar of records, New York City Department of Health, shows the number of deaths reported for the year was 71,252, a decrease of 2,180 over the average for the preceding five years. The causes of death which showed a materially decreased mortality were influenza, a decrease of 1,695; pulmonary tuberculosis, 1,220; diarrheal diseases under 5 years, 1,023; diphtheria and croup, 248; scarlet fever, 143; acute respiratory diseases, 538, and tuberculous meningitis, 100. Causes showing materially increased mortality were chronic degenerative diseases, 1,906. There was an increase in the number of cancer deaths of 642, of typhoid fever, 48; poliomyelitis, 46; appendicitis, 94; cirrhosis of the liver, 22; accidental deaths, 253; homicides, 63, and suicides, 34. The great saving in life was in children under 5 years of age, there being 2,459 fewer deaths than in the 5 year average. The death rate for the year was 11.84 per thousand population, compared with 12.21 for the 5 year average. The infant mortality rate was 68 out of every 1,000 infants born, as compared with the average rate of 76. There were 130,426 births reported during the year, a decrease of 838.

Society News.—Dr. Herman Goodman lectured before the Clinical Society of the New York Skin and Cancer Hospital, Dec. 26, 1924, on "Frambesia Tropica and Syphilis."——At the meeting of the Medical Association of the Greater City of New York, January 19, at the Academy of Medicine, Dr. Haven Emerson will speak on "The Dependence of Increased Life Expectancy Upon the Private Practice of Preventive Medicine" and Dr. Sigard Adolphus Knopf on "Psychology, Psychopathology and Psychotherapy in Tuberculosis in Civilian and Military Life."——The Westchester County Medical Association will hold its next meeting, January 20, at St. John's Hospital, Yonkers. Dr. Willy Meyer will speak on "Advanced Pulmonary Tuberculosis, A Borderline Disease."——Physicians of the East Side have organized the East Side Clinical Society, a unique organization in that no papers are permitted to be read. It aims to promote clinical study, and any member in good standing may at any time present an interesting case, specimen or instrument. The president is Dr. Joseph Vandenberg; Drs. Hyman Goldstein and Rubin A. Gerber are vice presidents; Dr. Jacob Daley is corresponding secretary, and Dr. Raphael L. Dourmashkin, treasurer.

NORTH CAROLINA

Public Health.—In a biennial report, the state board of health gives a résumé of the improved health conditions in North Carolina, in which state the first county health department in this country was established; it is second now in the number of such health agencies, Ohio having first place. Only five states spend more money for the promotion of health among its people than North Carolina. In the last two years, antityphoid vaccinations have been administered to 281,411 persons; 87,727 have been vaccinated against smallpox, and 79,533 children have been given toxin-antitoxin to make them immune to diphtheria. This work has been done in cooperation with physicians of the state. Dentists employed by the board have examined 65,341, of whom 54,830 received free dental treatment. This is only a small part of the health work performed.

Hospital News.—A charter has been issued for the Thompson Memorial Hospital, Lumberton, to replace the institution of that name which burned recently. The new hospital will cost $100,000.——The trustees of the State Orthopedic Hospital, Gastonia, will ask the coming legislature, it is reported, for $160,000 for permanent improvements, including an addition that will accommodate forty white children.——Watts Hospital, Durham, announces alterations and additional construction costing $200,000, which will be started at once, and will increase its bed capacity 40 per cent. This hospital cared for 3,576 patients in 1924.——The Methodist churches of Winston-Salem have completed the new forty bed hospital at the Methodist Children's Home.——The inmates of the state penitentiary who are criminally insane were recently transferred to the State Hospital for Insane, Raleigh. The superintendent will ask the present legislature for appropriations to erect special buildings for these patients.

NORTH DAKOTA

Resolution on Vaccination.—The board of health of Burleigh County has adopted resolutions urging the present session of the legislature to reenact the law providing for vaccination of school children and to repeal that part of the law passed in 1919, which repealed the previous vaccination law. The board asserts, it is reported, that the prevalence of smallpox in that state now is largely due to the repeal of laws which required school children to be vaccinated.

OHIO

Chiropractor Guilty.—G. F. Morris, chiropractor, Bethel, was found guilty, Dec. 20, 1924, of practicing medicine without a license and sentenced to pay a fine of $25 and costs, it is reported.

Health Offices Consolidated.—At a joint meeting of the health boards of Troy and Miami counties, January 2, Dr. Porter J. Crawford, North Olmstead, assistant health commissioner of Cuyahoga County, was selected as city and county health officer. Heretofore these offices were separate.

Cincinnati Oysters.—The commissioner of health of Cincinnati issued a bulletin, Dec. 29, 1924, concerning the examination of oysters in that city for evidence of sewage pollution. He said, it is reported, that all of the specimens examined in the laboratory last week showed the presence of the colon bacillus in 0.1 c.c. of the oyster liquor, and that ten out of twenty-two lots examined that day "were bad." It was decided to examine incoming shipments daily and to permit the sale only of oysters which failed to show evidence of pollution.

Appointments at University of Cincinnati.—The board of directors, University of Cincinnati, has announced the appointment of the directors of departments in the College of Medicine for the period of one year, beginning January 1, as follows:

Medical service, Dr. Roger S. Morris; surgical service, Dr. George J. Heuer; pediatric service, Dr. A. Graeme Mitchell; obstetrical service, Dr. William Gillespie; gynecological service, Dr. Sigmar Stark; neurological service, Dr. Herman H. Hoppe; orthopedic surgical service, Dr. Walter E. Murphy; laryngological service, Dr. Samuel Iglauer; ophthalmological service, Dr. Robert Sattler; urological service, Dr. E. Otis Smith; dermatological service, Elmore B. Tauber; roentgen ray service, Dr. Sidney Lange; pathological service, Dr. Richard S. Austin; bacteriological service, Dr. William B. Wherry; and biochemistry service, Albert P. Mathews, Ph.D.

Hospital News.—The main building of Rocky Glen Sanitarium, McConnellsville, was recently destroyed by fire.——The East Side Hospital, Toledo, is conducting a campaign for $300,000 for a modern hospital building.——Construction work on an addition to the Flower Hospital, Toledo, which will increase its capacity by eighty beds, was started, Dec. 15, 1924.——An addition to the City Hospital, Coshocton, including a children's ward, maternity department and nurses' home, was recently opened.——Stillwater Sanatorium, the tuberculosis hospital of Montgomery and Preble counties, will have its capacity more than doubled during the present year by the addition of buildings costing more than $200,000.——A bond issue of $125,000 for a nurses' home for the Franklin County Tuberculosis Sanatorium was authorized at the November, 1924, election.——The new children's building at Springfield Lake Sanatorium, Summit County, was dedicated, November 13.——The Huron Road Hospital, Cleveland, which for fifty-one years has occupied the same site in the downtown section, is using the former residence of the late Dr. Dudley Allen as temporary quarters, anticipating the erection of a new building in East Cleveland.——The City Hospital, Bellaire, will erect a twenty-five bed addition costing about $40,000, as soon as weather conditions permit.——The new Toledo Municipal Hospital will be equipped and operated jointly by the city and Lucas County, the former furnishing heat, light and janitor service and paying $25,000 annually to the hospital.——An agreement is said to have been reached whereby the state may purchase Longview Hospital for $1,500,000, contingent on authorization by the legislature. The hospital is owned by Hamilton County, but the state assumed charge of it several years ago; another agreement was reached recently which gave the state a lease on the institution for an indefinite term of years for a stated annual sum.

OKLAHOMA

Personal.—Dr. George Hunter, Oklahoma City, assistant city physician, has been appointed county superintendent of health following the unification of the Oklahoma County health agencies, and Dr. George L. Borecky has been appointed assistant city physician to succeed Dr. Hunter.——Dr. Harry H. Cloudman, representing the Oklahoma County

Medical Society, has been appointed a member of the newly organized Oklahoma City Board of Health, it is reported.

Public Health Unit.—With the joint support of the U. S. Public Health Service, the Oklahoma State Health Department, the Okmulgee County commissioners and the Okmulgee Public Health Association, a county public health unit for Okmulgee County is being established. The federal government is contributing $2,500 a year; the state will contribute an inspector; the county, a clerk, and the public health association, a nurse, until July, when the county commissioners will make further provision.

OREGON

Society News.—At a meeting of the Lane County Medical Society, Eugene, Dec. 17, 1924, Dr. Nels C. Nelson, Eugene, was elected president; Dr. Frederick E. Adams, Eugene, vice president, and Leslie S. Kent, Harrisburg, secretary-treasurer.

Naturopath Bill Defeated.—A summary of the recent vote on the naturopath bill shows, it is reported, that 62 per cent. of the voters of the state voted against the measure, and 38 per cent. of the voters favored it. Certain counties gave a larger percentage of votes favoring the measure than the average. Multnomah County, for example, where Portland is situated, gave 42.1 per cent. of its votes in the attempt to put this measure across; 49.5 per cent. of the votes in Lincoln County favored it, and 27.5 per cent. in Linn County. The principal city in Linn County is Albany.

PENNSYLVANIA

Licenses Suspended.—At a meeting, Dec. 10, 1924, the state board of medical education and licensure, Harrisburg, suspended the licenses of Drs. James P. Kirk and Edward G. Rappold, both of Erie, on account of violation of the Harrison Narcotic Law. Drs. Kirk and Rappold are both serving sentences in the federal penitentiary, Atlanta, Ga.

Tuberculosis Conference.—At the annual conference, January 20-21, Pittsburgh, under the auspices of the Pennsylvania Tuberculosis Society, among the subjects for discussion will be "Heliotherapy," "Rehabilitation" and "Child Health." Visits have been arranged to the Beaver County Tuberculosis Sanatorium and to the Tuberculosis League of Pittsburgh. The presiding officers, January 21, will be Dr. Charles J. Hatfield, president, National Tuberculosis Association, and Dr. Thomas McCrae, Jefferson Medical College, Philadelphia. This conference will be the occasion for the thirty-third annual meeting of the Pennsylvania Tuberculosis Society.

Delaware County Medical Society.—Organized in May, 1850, this society will soon complete its seventy-fifth year. At a meeting in the Penn buildings, Chester, May 30, 1850, its constitution was adopted, providing that any person of respectable standing in the profession, a graduate of any medical school recognized by the state medical society, of good moral character, or who had been in practice in the county for fifteen years as a regular physician, was eligible to membership, provided he did not prescribe any compound whose nature he did not know, was not interested in any patent medicines or did not claim superior qualifications in the treatment of disease. The members were forbidden to render gratuitous medical service to any clergyman or physician whose name was on any certificate in favor of patent medicines. Having been dissolved during the Civil War, a permanent organization was again effected in 1869, since which year its existence has not been interrupted. At the regular monthly meeting, January 8, a paper prepared by Col. L. Mervin Maus, U. S. Army, retired, "A Brief History and Medical Sketch of the Hot Springs of Arkansas" was read.

Philadelphia

Death from Smallpox.—The first death in this city from smallpox, since 1912, occurred, January 3, at the Philadelphia Hospital for Contagious Diseases, the patient having given a history of being infected outside of Philadelphia. There was on that date thirty-two cases of smallpox in the city. Several of these cases were among the white population, while heretofore the disease has been confined to colored people.

Annual Death Rate.—The director of public health issued a bulletin, January 1, showing that the death rate for 1924 was 12.81 as compared with 13.86 for 1923, and that the total number of deaths was 24,997, about 2,000 less than 1923. There was a general reduction in practically all the important causes of death with the exception of typhoid fever, which showed a moderate increase. Of particular interest is the reduction in the infant mortality rate from 78.6 in 1923 to 73.5 per thousand births. There were 262 deaths due to automobile accidents, as compared with 304 in 1923. There were 145 homicides compared with 180 the previous year, and 290 suicides as compared with 277. There were ninety deaths from alcoholism in 1924, which is nine less than in 1923.

TENNESSEE

Personal.—Dr. Walter S. Leathers, now spending a year in Europe preparatory to taking up the chair of preventive medicine, Vanderbilt University Medical Department, Nashville, was recently made a member of the Royal Sanitary Institute, London.——Dr. Benjamin T. Terry, department of pathology, Vanderbilt University School of Medicine, Nashville, was awarded first prize in the pathologic exhibit at the recent Southern Medical Association meeting, New Orleans. ——Dr. John M. Maury, the recently elected president of the Memphis and Shelby County Medical Association, has been appointed to succeed the late Dr. Marcus Haase on the medical advisory board of the Memphis General Hospital.

Tuberculosis Work in Shelby County.—Dr. James A. Price, superintendent, Oakville Memorial Sanatorium, has been elected medical director of the Shelby County Tuberculosis Society. The directors of the society approved the recommendation of the executive committee to offer two scholarships of $500 each in the field of health education and the plan to set aside $1,000 during the year to provide blankets, tents and necessary clothing for needy tuberculous patients under treatment in their own homes. One of the scolarships will be used to provide a physician with training at the Saranac Sanatorium, New York, the other will be at the disposition of the county board of education, to be offered to the teacher who shows the greatest progress in health education work in the county schools.

TEXAS

Rabies.—The director of the state Pasteur institute has reported an unusual amount of rabies among the dogs examined during the last two months. On Dec. 29, 1924, there had been received for examination during that month 150 specimens, more than 40 per cent. of which were infected; in November, about 42 per cent. of the specimens received were infected.

"Dr." Elam Falvey Fugitive from Justice.—Elam Falvey, formerly of Houston and Somerville, was recently arrested and jailed on a charge of false swearing, it is reported. On former occasions, Falvey attempted to get into Wisconsin and California on an altered duplicate of a license issued to Dr. J. C. Falvey. In securing a narcotic permit it was necessary for him to make an affidavit that he was a registered physician, and since he is not, the Texas Board of Medical Examiners charged him with false swearing, and turned the evidence over to federal authorities. He was indicted at Abilene and released under bond, but failed to appear at San Angelo when the case was called for trial.

WISCONSIN

Compensation Awards Make Record.—The state industrial commission announced, Dec. 30, 1924, that during the year it has paid out $3,862,729 in compensation awards, a larger amount than for any other year. There were 22,393 cases settled, also a record. The average indemnity paid per case was $125, and the average cost of medical aid was $47. The total cost of medical aid was $1,059,480, not including cases in which the disability was less than eight days. Awards were made in 1,240 cases, which is 5.5 per cent. of the total number of cases settled.

WYOMING

Society News.—At a meeting of the Natrona County Medical Society, Casper, Dec. 23, 1924, Dr. Victor R. Dacken was elected president; Dr. Herbert L. Harvey, vice president, and Dr. Thomas J. Riach, secretary, reelected.

PHILIPPINE ISLANDS

Society News.—The joint annual meeting of the Philippine Islands Medical Association and the Manila Medical Society was held at the Philippine General Hospital, Manila, Dec. 17, 1924. Dr. Antonio G. Sison delivered the presidential address on "The Clinician of the Present Time." The president held an informal reception at the College of Medicine

Hall, December 17, and there was a smoker at the Philippine General Hospital the evening of December 18, between which and the closing address by Dr. Carmelo M. Reyes, president Manila Medical Society, many scientific papers were read and discussed.

CANADA

Federal Licensing of Physicians.—A proposal to have amended the Medical Act of Canada, so that physicians would be licensed exclusively by the federal medical council instead of by the council of the several provinces, was brought up for discussion before the Canadian Medical Association at its December, 1924, meeting, Ottawa, when efforts to reach an agreement on the subject failed. Resolutions were adopted at this meeting, establishing the December meeting of the association as an annual event, urging continued federal and provincial support to the antivenereal disease campaign and expressing the view of the convention that five years was the proper term for training medical students, three of these years being devoted to clinical subjects.

GENERAL

International Course of Lectures.—The Sixteenth International Course of Lectures on Medicine will be given in Vienna, Austria, February 9-21, under the title, "Diseases of the Digestive Organs and Their Therapeutics."

Fund for Biologic Publicity.—It was announced, January 1, that the Rockefeller Foundation had made a grant of $350,000 to the American Association for the Advancement of Science, to be used for the publication of abstracts and reviews of scientific articles on biologic subjects.

The Hall Estate.—The late Anna S. Hall, the daughter of Charles F. Hall, the Arctic explorer, who after going on his third expedition, 1879, was not heard from, left her estate to the Smithsonian Institution. It is estimated at about $20,000, the remains of a $25,000 award to her family by the government.

Menthol Bearing Plants.—Experimental plantings in various parts of the United States during the last year by the Agricultural Department have shown that menthol bearing plants can be grown profitably in certain regions of this country. Menthol is now imported at a cost of more than a million dollars annually.

Civil Service Examination.—The U. S. Civil Service Commission announces that positions are open for medical officers, the salaries ranging from $1,860 a year for junior medical officers to $5,200 a year for senior medical officers. Applicants are desired who are qualified in general medicine and surgery and in a number of the specialties. Competitors in this examination will not be required to report at any place for examination but will be rated on their education, training and experience. Applications will be received until June 30.

Books in Braille.—Volunteers who are engaged in transcribing books into the braille system for the benefit of the blind completed 5,784 pages of braille in the month of November, 1924. This marked the completion of fifty-eight volumes. According to the *Red Cross Courier*, the Baltimore chapter produced the largest number of volumes, while other chapters noted for this work were the District of Columbia chapter, the New York County chapter, that at Santa Barbara, Calif., Hickory, N. C., Salem, Mass., Utica, N. Y., and the Boston metropolitan chapter.

Red Cross Eliminates the Six Divisions.—As part of a plan to strengthen the service of the American Red Cross and to effect a more economic organization, the central committee at its recent meeting decided to abolish the six Red Cross divisions as such, effective February 15. The national headquarters staff in Washington will serve all territory now in the New England, Washington and Southern divisions; a branch of national headquarters will be maintained at St. Louis to serve the present Central and Southwestern divisions, and a branch office at San Francisco will serve what now constitutes the Pacific division. An annual saving of at least $130,000 will result, as well as an improvement of service to chapters, and there will be more field representatives.

Society News.—At the annual meeting of the American Society for Experimental Pathology, Dec. 29, 1924, Washington, D. C., the following officers were elected: president, Dr. George H. Whipple, Rochester, N. Y.; vice president, Dr. Wade Hampton Brown, New York, and secretary-treasurer, Dr. Edward B. Krumbhaar, Philadelphia.——Prof. Anton J. Carlson, Ph.D., Universtiy of Chicago, was elected president of the American Physiological Society at the annual meeting, Washington, D. C., Dec. 30, 1924; Walter J. Meek, Ph.D., University of Wisconsin Medical School, Madison, secretary, and Dr. Cecil K. Drinker, Harvard University Medical School, Boston, treasurer.——The next annual meeting of the American Urological Association will be in St. Louis, May 21.

The Solar Eclipse.—A special committee of the American Astronomical Society having been appointed to conduct a general publicity campaign concerning the eclipse of the sun, January 24, it is circulating a series of questions so that a person without knowledge of astronomy or eclipse phenomena can help determine whether the eclipse was total or not at his position. It is expected that on the days just preceding the eclipse these questions will be published by newspapers and that as many persons as possible will clip the coupons and mail their answers to "Eclipse," National Research Council or The Editor, *Scientific American*, 233 Broadway, New York. This eclipse is remarkable chiefly by the fact that the zone of totality passes over an area more thickly populated than any other of modern times. It is also unique in the fact that the zone of totality includes ten or twelve observatories.

Investigation of Oysters and Typhoid Fever.—The U. S. Public Health Service has begun an epidemiologic survey of oyster production and shipments from New York and other cities, because of the serious increase in number of typhoid fever cases in the last two months in New York and Chicago. It is understood that at the present time there are approximately 600 cases of typhoid fever in New York, which is far in excess of normal typhoid morbidity. A meeting was held this week at the Bureau of Fisheries, Washington, D. C., at the instance of oyster producers from Baltimore and other eastern cities. The oyster industry has been seriously curtailed because of the alleged typhoid contamination of oyster beds, and oyster producers are suffering large financial loss because of the inability to market their product under present conditions. In numerous cases it is known that the typhoid patients have been using raw oysters as food. In New York there has been no increase in typhoid in the poorer sections, nor have any facts been disclosed indicating that the water or milk supply is the source of infection. A curious phase of the situation is that there has been no apparent increase in the ratio of typhoid cases in such cities as Baltimore or Philadelphia, although Baltimore is probably the chief oyster producing and distributing center of the United States. A reasonable inference from the present available facts is that possibly one or two oyster production beds may be contaminated. The U. S. Public Health Service has for some time been making extensive study of the subject. Drs. L. L. Lumsden and F. A. Carmelia and several epidemiologists have been making preliminary examinations of some oyster beds in lower New York Harbor, and have inaugurated an extensive examination of all cases of typhoid in New York City. A similar investigation of each case of typhoid in the Chicago district has also been planned by the same physicians and others representing the U. S. Public Health Service. Dr. Lumsden was to arrive in Chicago, January 15, to take up this work.

LATIN AMERICA

Personal.—Dr. José Azurdia has been appointed president of the national public health service in Guatemala, with Dr. M. Muñiz, secretary. Drs. R. Alvarez and A. A. Rivera were appointed alternates. The public health service is being reorganized, and the government is planning cooperation with the International Health Board for a five year campaign against hookworm.——Dr. R. Chaves M. has been appointed consul general for Guatemala at Hamburg in place of Dr. R. Alvarez who has resigned.

FOREIGN

Metric System Adopted.—It has been officially announced that the metric system will be used exclusively in the Dutch East Indies. Amsterdam pounds and piculs will be abolished. Heretofore the two systems have been functioning side by side.

Italian Society Elections.—The Italian Surgical Society has elected Professor Alessandri, Rome, president, and Professors Leotta and Delitala, vice presidents. The next congress is to be held at Rome, and the topic for discussion is "Surgery of Occlusion of the Bowel." Prof. L. Torraca, Rome, is secretary.——The Pediatric Society elected Prof. R. Jemma,

Naples, president; Professors Pacchioni, Genoa, and Francioni, Bologna, vice presidents, and Caronia, Rome, secretary. The next annual meeting will be held at Naples.

Expenditure on Tuberculosis in London.—The forecast of the expenditure for the year 1925-1926 on the treatment of tuberculosis in London has been given to the Ministry of Health by the London County Council and amounts to £135,650, which is £15,000 more than the estimate for the present year. The net expenditure on maternity and child welfare services, says the *British Medical Journal*, is estimated at £10,190, which is also larger than the estimate for the present year. The council's proportion of the estimated expenditure for venereal diseases, to be apportioned between the council and neighboring local authorities, is £91,565, almost the same amount as for the present year, but these figures exclude sums of £20,000 and £10,000 which it is proposed to include in provisional amounts to cover possible developments in the work.

Prizes Awarded by the French Académie de Médecine.—The academy had forty-four prizes to distribute this year; the successful competitors nearly all being residents of Paris. The Audiffred prize, representing securities yielding 24,000 francs income, to be given "for a sovereign cure for tuberculosis," was not awarded, but prizes were given to Sicard and Forestier for their introduction of iodized oil into roentgenographic exploration; to Bourguignon, for his practical application of chronaxia; to Portret, for his success with galvanic electricity in treatment of exophthalmic goiter resistant to other measures, and to G. Ramon, of Garches, for his anatoxin for immunization against diphtheria. He found that diphtheria toxin loses its toxicity when incubated for several weeks, after addition of a little formaldehyd, while its antitoxin-producing power is intensified. Other prizes were given to G. Bidou, for success in "uncrippling cripples" by his physiologic control of artificial limbs, and to Hauduroy, for his discoveries on the behavior of the bacteriophage in typhoid. The academy offers fifty-three prizes for competition in 1925, all but six of which are open to the world. The academy has a total of eighty-eight prizes to distribute, and four new ones have been recently founded.

Personal.—The Foustanos prize of 4,000 drachmas was awarded this year by the Athens Medical Society to Dr. Moyssidis for his monograph on "Puericulture in Antiquity." The Symboulidis prize of 10,000 drachmas was not awarded. ——On the occasion of the clinical week at Toulouse, the king of Spain decorated, with the cross of the Order of Isabella, Drs. Abelous, Bardier and Molinéry. Dr. Abelous is dean of the medical faculty.——The eleven physicians who attended the premier of Austria, Seipel, who was injured during a political disturbance a few months ago, have been presented by the president with gold or silver medals; Eiselsberg and Ortner were given the gold ones.——Privatdozent Zeiss of Hamburg, who has been in charge of the bacteriologic work of the German Red Cross in Russia, now disbanded, has accepted a position in the Pasteur Institute at Moscow. ——The T. Kocher prize at the University of Bern has been given to Professor Baltzer to enable him to continue research on heredity and predetermination of sex.——The Royal Society at London has conferred its gold medal on Albin Haller, professor of chemistry at Nancy.——The prize from the Rathenau Foundation to promote works on articular rheumatism has been given this year to Dr. G. Hauffe, Berlin, by the Berlin medical faculty.——The fortieth anniversary of the appointment of the surgeon Professor Forgue to the Montpellier medical faculty was celebrated recently by the presentation of a souvenir volume containing about sixty works on contemporaneous surgery by his friends and pupils. ——Dr. Gabriel Bidou, Paris, has been given the Bouchard prize by the Académie des sciences in token of appreciation for his methods of control of artificial limbs.

Deaths in Other Countries

Dr. **Adolf von Strümpell,** professor of pathology, Leipzig, aged 71; founder and editor of the *Zeitschrift für Nervenheilkunde,* a pioneer in the pathology of the nervous system. ——Dr. **Friedrich Trendelenburg,** professor of surgery at Leipzig since 1895, aged 80. He was elected honorary Fellow of the American Medical Association at the Boston session in 1906. His contributions to surgery include, among others, the Trendelenburg position, his cannula, operation, symptom and test for vein valves.——Dr. **Edmond Weill,** professor of children's diseases at Lyon.——Dr. **Jean Camus,** agrégé professor at Paris, and an editor of the *Paris médical* since its foundation.——Dr. **Ricardo Amaya Arias,** perpetual secretary of the Sociedad de Cirugía of Bogota.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 27, 1924.

John Irvine Hunter

The death at the early age of 27 at University College Hospital, London, of John Irvine Hunter, professor of anatomy at the University of Sydney, has cut short a career not merely of great promise but of remarkable achievement. In a memoir contributed to the *Lancet,* Prof. Elliot Smith writes: "The great name he bore would have overwhelmed a smaller man; but it is no exaggeration to say that he added fresh luster to it. In the brief four years of his professional life, this youth was the professor in charge of a department of anatomy in which great reforms in teaching and research were being achieved. Of this time he spent eighteen months traveling in Europe and America, widening his knowledge of medical education. His elucidation of the difficult problems of ovarian pregnancy, of the true reconstruction of the Piltdown skull and its significance, of the factors that determine the nature of spinal shock, of the comparative anatomy of the oculomotor nucleus, and especially of the functional significance of the sympathetic innervation of striated muscle and the central control of muscle tone, were each of them tasks of the first magnitude, the successful accomplishment of which would have brought fame to the man who devoted his lifetime to any of them. Yet Hunter did all these things with his other work before reaching the age of 27 years." Born in 1898 at Bendigo, Victoria, Australia, he was educated at Sydney University, where he came under the influence of Prof. J. T. Wilson, F.R.S., now professor of anatomy in the University of Cambridge. During his studentship he had to forego sports, in which he was keenly interested, and spend his time in coaching for a living. While yet an undergraduate, he was awarded the Sandes prize in surgery for an essay entitled "An Interpretation of Abdominal Pain," which Prof. Elliot Smith describes as "a penetrating and original analysis." On graduating with first class honors, he was immediately appointed senior demonstrator of anatomy. When, two years later, Professor Wilson was appointed to the chair of anatomy at Cambridge, Hunter became associate professor of anatomy at the age of 23. Before leaving Sydney, Professor Wilson persuaded the university authorities to put the youthful professor in charge of the department of anatomy and to give him the opportunity of widening his experience by visiting medical schools in Europe and America, which he did. His appointment was more than justified, for in addition to teaching he accomplished three important researches in the widely different fields of embryology, anthropology and physiology. He cleared up many difficulties in the interpretation of ovarian pregnancy, in the significance of the occurrence of Neanderthaloid stock characters in Australia, and in analyzing the factors of spinal shock following transverse section of the spinal cord. Before undertaking this work, he spent eighteen months abroad. For a year he occupied the post of honorary lecturer at University College, London, where he taught and carried on research. On his way back to Australia, he spent three months visiting Canadian and American schools. When he returned home he introduced important changes into the department of anatomy. He also embarked on a new task—the experimental investigation of the problem of muscular tone. He worked with an Australian surgeon (Royle), who was anxious to devise a means of alleviating spastic paraplegia. They found that what Sherrington calls "plastic tone" is function of muscle fibers

innervated by the sympathetic, and this led to the operation which has been successfully performed by Royle. Hunter and Royle were invited to New York to deliver the John B. Murphy oration, and gave demonstrations in the great medical centers of the United States and Canada. Hunter was then invited to London. He was to have given three lectures at the University of London, but he became ill and was found to be suffering from typhoid fever, from which, after a short illness, he died. He leaves a wife, who accompanied him on his journey.

Physician Removed from the Register for an Article in the Lay Press

The lay press has manifested much indignation at the removal of a physician from the Medical Register for contributing to one of its organs an article entitled "Childbirth: Amazing New Discovery." He declared that one of the reasons why childbirth is so dangerous is that the medical profession thinks too much of scientific achievement and too little of the humanities of life; it is tied down by convention and tradition, and is chary of making use of any new discovery. The article proceeds to describe a method called "autonomous relaxation," in which the patient "under the physician's hands is made automatically and instinctively to relax her nervous tension, thus enabling the body to perform its natural functions, including childbirth, in a natural way." When the physician appeared before the general medical council, he admitted in cross-examination that he had tried the method fifteen years ago in only a very few cases, possibly only two, and then left general practice and had "no further use for obstetrics." He said that his object in writing the article was to draw attention to defects in medical society organization whereby use was not made sufficiently early of important scientific discoveries. Asked how that would be furthered by the article, he said by his appearance before the council. Asked why he had not made the medical journals his medium, he replied that he had not found anything advantageous in articles in them to the public, to physicians or to himself. Asked what he meant by "autonomous relaxation," he said that it was a relaxation of muscular and mental effort, apart from the determination of the patient, and assisted by practicing suggestion. He had found the method applicable to such an enormous number of conditions that he was overwhelmed by the experiments he had to undertake. He was found to have been guilty of infamous conduct in a professional respect, and his name was removed from the Medical Register. But in the lay press the writer of this blatant nonsense, who has the hardihood to describe himself as "a hard working scientist," is proclaimed the victim of a tyrannical and antiquated body because he dared to publish an important discovery. The charge against him was that he was endeavoring to attract public attention by disreputable methods.

The Declining Birth Rate

An important discussion on the declining birth rate, held at the Royal Statistical Society, was opened by Dr. T. H. C. Stevenson of the General Register Office, who began by referring to three recent papers on the question of population by Bowley, Brownlee and Yule. Perhaps the most important result arrived at by Dr. Brownlee was that the present reduced birth rate was only just sufficient to maintain a stationary population. This the speaker had no difficulty in accepting. Mr. Yule had wisely warned us against the risk of attempting to prophesy the distant future of our population. Prophecy was most dangerous for the statistician, for it could be based only on the continuance of recent conditions, and as to the future of these the one thing we might assume was change. The conditions were actually changing not only in this country but in Germany especially. The birth rate of Europe as a whole, which during the nineteenth century had not varied greatly, had taken a sudden downward plunge with the advent of the twentieth century, and had continued to fall at an accelerating pace, until the outbreak of war in 1914 spoiled the comparison. Germany had been much more affected by this movement than England and Wales, whose birth rate decline before the war had been similar to that of Europe generally. This fact, little known in this country, was no doubt well known in Germany, and it was interesting to speculate how far it might have contributed to fixing the date for setting the German war machine in motion. The suddenness of the change suggested interference with the laws of nature, as by increased practice of contraception, rather than a change in the laws of nature themselves, though even on that theory he found it difficult to explain how 240 million people had simultaneously come to make such a radical change in their lives.

MADRID

(From Our Regular Correspondent)

Dec. 15, 1924.

Surgical Treatment of Angina Pectoris

Dr. Arce, professor of surgery in the medical school, and rector of the University of Buenos Aires, has given a lecture in the National Academy of Medicine on the surgical treatment of angina pectoris. In his cases he has followed Jonnescu's method, removing the left cervical sympathetic with its three ganglions and the first left thoracic ganglion. Three patients were operated on under regional and local anesthesia, procain, 1 or 0.5 per cent., being used. He condemns general anesthesia in this operation. One patient was an Italian, another a Spaniard, and the third a Russian. In the first case the main symptom was pain, while in the others there were in addition cardiac and aortic injuries. Dr. Arce favors Jonnescu's method in the cases in which the only symptom is pain. When the examination, supplemented with blood pressure, sphygmographic and electrocardiographic tests, shows injuries of the heart or aorta, these will remain to be treated and the result will not be as favorable. Of the three patients treated by Arce, the first recovered completely, and in the other two the pain also has subsided, but treatment of the other heart lesions must be continued. In none of these cases was the operation performed more than four months ago. Dr. Arce is enthusiastic about this method. On the same day as his lecture, the title of corresponding member of the academy was conferred on him.

Two Lectures on Complications of Pregnancy

Dr. Monckeberg, professor of obstetrics in the Santiago, Chile, Medical School, has given two lectures here. Both were interesting, as should be expected from his wide experience. His lecture at the Madrid Medical School dealt with tuberculosis and pregnancy. He admitted the harmful effect of gestation on tuberculosis, adding that unless there are clinical symptoms, the disease seldom increases in virulence. It is otherwise when there are active lesions, as the disease then shows a tendency to spread. Among conditions that favor this tendency are multiparity, the type of the lesions and gravidic leukemia in the last stage. The direct cause is the enormous decalcification borne by the maternal organism in order to supply the needs of the fetus. This action is so apparent that the curves of decalcification in the different stages of pregnancy and the extension of tuberculosis become parallel. In addition to decalcification, we have the gravidic anergy; i. e., the weakening of the body defenses against infections and intoxications, including tuberculosis. This anergy may be demonstrated through decreased immunity reactions and experimental anaphylactic phenomena. It

may be due not to the discontinuance of antibody production by the maternal organism, but to the fact that antibodies must be employed to dispose of placental proteins. As a result, Abderhalden's test is positive, while the other immunologic tests are not. Another factor is the hepatic deficiency seen in pregnancy. As regards treatment, a conservative policy seems the best, although in some cases it is necessary to induce abortion. Radical surgery is indicated when the mother seems in danger because of her condition, and there is a possibility of improvement by stopping gestation. Otherwise, surgery should be kept in reserve for an emergency. The same rule applies when pregnancy is more than three months advanced, as in this case any operation might prove harmful. In any case, surgical treatment should be restricted to emptying the uterus.

November 10, Dr. Monckeberg delivered his second address at the Royal Academy of Barcelona, dealing with liver insufficiency in pregnancy. Forty per cent. of normal pregnant women show liver disturbances caused by the changes brought about by gestation in the organism. The hepatic disturbance is not limited to the presence of a more or less serious jaundice. This may be due to any one of several causes. Roger has admitted that jaundice may be caused by increased hemolysis, bile retention or changes in the liver cells. Dr. Monckeberg has found these three agents at work in pregnancy jaundice. The effort of the liver to dispose of the products brought by the placental blood throws another load on the hepatic cells. The resulting increased pigment thickens the bile. Its circulation then slows in the bile passages. To this is added the pressure exerted by the gravid uterus, which also favors retention. The increased size of the uterus also presses the large intestine. If the pregnant woman suffered from constipation, this will promote the passage of *B. coli* to the gall ducts. This path of infection has been known since Garnier showed in 1923 the growth of the typhoid and colon group bacilli in the gallbladder. The increased liver function causes normally in the pregnant women a larger output of pigment. Until a short time ago, this was attributed to the action of the suprarenals. In four cases of postpartum copious bleeding, Monckeberg was able to prevent all hemorrhage in the following labor through the administration of fresh liver extract from the sixth month on.

Lectures by Professor Chutro of Buenos Aires

Dr. Chutro, professor of surgery in the University of Buenos Aires, has given some lectures in the General Hospital. They proved a real event, as it was the first time a foreign professor spoke in this institution. The first two conferences were devoted to osteomyelitis, the third to anthrax, and the last to the differential diagnosis between syphilis and tuberculosis and cancer in ulcers of the lip. Chutro stressed the clinician's essential duty to examine the patient thoroughly. The laboratory is an assistant, but not a guide. Diagnosis should not be made in the laboratory, but at the patient's bedside. One should always be on guard against defective roentgen-ray shadows, as the roentgenogram may show a different picture according to the plane focused by the operator. A similar thing may happen with tissue examinations. In a case of prostatic enlargement, there was much disagreement among the staff in the Buenos Aires Medical School, as a histologist took presumably a slanting section of a culdesac of the prostate and, as a result, some thought it was malignant, while histologists who had examined other sections held a different view. In operating for cancer, one must consider the possibility of infiltration at a distance from the tumor. Such infiltration Chutro considers as frankly malignant. Sometimes, in making a coxofemoral amputation for a tumor in the lower limb, he has noticed a slight colloid infiltration. Here is where the recurrence takes place after a few months. This experience often compels him to advise against operating in cases which other physicians consider entirely operable.

Trouble in the Medical-Surgical Academy

The Medical-Surgical Academy is the local medical society where young physicians exhibit their first efforts. Some of the papers presented possess a great deal of merit. The secretary, however, in publishing the transactions was impressed with the phraseology of many of the papers, which seemed somewhat out of harmony with the prevailing tendency in modern western science. His rôle was rather difficult, as he had to please both the members of the academy and a publishing house, which was printing the transactions as a section of a medical journal. As a compromise, he suggested limiting publication only to those papers approved by a vote of the society. This proposal was received with much indignation. Some members even suggested the possible existence of a plot to suppress reports of authors who might be *persona non grata* to the journal publishing the transactions. The secretary's proposal, as well as the contract with the publishing house, were turned down. The consensus seemed to be that contemporary opinion cannot judge the merit or demerit of medical reports, as this task belongs to future generations. A few centuries from now, when another Mr. Carter should enter the pyramid where the transactions of this society are kept, may the reading of the buried reports reward his efforts!

BERLIN

(From Our Regular Correspondent)

Dec. 20, 1924.

The Cause of the Haff Disease

Further investigations of the cause and nature of the Haff disease, to which I referred in a previous letter (THE JOURNAL, Nov. 29, 1924, p. 1783), have resulted in an apparently satisfactory explanation. According to statements made in an address delivered by Professor Lentz, member of the medical department of the Prussian welfare ministry, before the Berlin Medizinische Gesellschaft, the disease is the result of poisoning by arsin, which had been introduced into the Haff through the waste water from two cellulose factories. The poisoning is caused by arsin, which, owing to the use of iron pyrites, develops continually from the arsenic contained in the waste water and is breathed in by the fishermen. Waste water from the cellulose factories was found to contain 28 mg. of arsenic per liter, so that it is estimated that about 56 kg. of arsenic was emptied daily into the Haff. The factories have been prohibited from emptying arsenic-containing waste water into the Haff, and if now no further cases of the Haff disease arise this will furnish a confirmation of the present assumption in regard to the nature and cause of the outbreak. The immediate future will decide. Some doubts are still entertained as to the correctness of the explanation because of the fact that no traces of arsenic have been found in the patients suffering from the disease. It has also been emphasized that in the region of Danzig, on the western shore of the Haff, cases of the disease have been noted, although a careful examination of water and soil for a distance of 2,000 meters from the point where the Pregel River (which receives the waste water from the cellulose factories) empties into the Haff has failed to reveal the presence of arsenic.

The Decline of the Birth Rate in Berlin

For Berlin, the year 1876, with 47 births per thousand of population, marked the apex of the birth-rate curve, but, at the same time, the beginning of a marked decline of the birth rate, which has persisted, in the main, since that time. In the

years just previous to the war, the birth rate fell to 21 per thousand. During the war, births declined still further, and, after the close of the war, only the great increase in the number of marriages brought about a temporary increase in births for the years 1919 and 1920. With the advent of 1921, however, doubtless influenced by the increasing economic distress resulting from the acute depression in the value of the monetary unit, the mark, a new and marked decline of the birth rate set in, which then reached in 1923 the unheard-of low point of 10.4 births per thousand of population. It is evident, then, that the general birth rate of Berlin had dropped to one fourth the high record established in 1876. Within the present limits of Berlin, the number of living births recorded for 1923 (38,551) is only about 50 per cent. of the number registered in 1913 (76,665), although the total population has increased in the interim by 40,000 persons. This decline has occurred, too, in spite of the fact that the number of marriages has increased. It is remarkable to note, in this connection, that, for the last few years, the number of births has been even less than the number of marriages.

This decline in the birth rate finds its expression, as the director of the statistical bureau of the city of Berlin has pointed out in the *Berliner Wirtschaftsberichten*, first, in the increase of childless marriages, and secondly, in a sensible decrease in the average size of families. However, no exact statistics concerning the average number of children per family are available for Berlin. But investigations on the order of birth, that is, on the place of the births in the serial order in a given family, give us a valuable insight into the situation. For example, it appears from the statistics that, taking the period from 1900 to 1909, 32 per cent. of the living births were the first living offspring in the family, whereas in 1923 the percentage had risen to 55. If we figure the number of living children born in wedlock according to the order of births, we find that from 1900 to 1923 the number of first living offspring decreased 36 per cent., the number of second living offspring, 61 per cent., and the number of the fourth and the following offspring, 87 per cent.

Although, in a single city, the effects of a decline in the birth rate may be offset to a great extent by increased immigration, yet the results of the decrease in the birth rate during the last fifty years are beginning to be noted in Berlin on more than one account. For example, in 1880 the average number of persons in a household was 4.4, but in 1919 the number had dropped to 3.2. Also a shifting in the number of members in the various age groups, as a result of the fall in the birth rate, is beginning to become quite manifest. In 1880, 29 per cent. of the total population was made up of children belonging to the 0-15 age group, but in 1919 the proportion had dropped to 19 per cent.

Death of Albin Hoffmann

Prof. Dr. Albin Hoffmann died in Leipzig on his eighty-first birthday. Hoffmann, a native of Berlin, pursued his academic course in Tübingen and Würzburg. While still a student in the Pathological Institute, of which von Recklinghausen was the director, he made an observation that corresponded to the famous Cohnheim experiment on which is based the theory that the emigration of the leukocytes is the essential feature of inflammation. He obtained the degree of doctor of medicine in 1869, and soon after became an assistant to Frerichs in the first medical clinic of the Charité Hospital. In 1872 he became an instructor in the university, and two years later was called to the University of Dorpat, where he became head professor in the field of special pathology and therapy. Since 1886, he had served as the director of the Medizinische Poliklinik in Leipzig. In addition to his researches on the subject of inflammation, to which he devoted considerable time and energy, his experimental studies on diabetes mellitus have a preeminent value. The theory and practice of roentgen-ray diagnosis have also been enriched by his contributions on the subject. His publications "Die allgemeine Therapie" and "Diätetische Kuren" have had a wide circulation. In his university lectures he gave special consideration to social insurance. He displayed a great interest also in the leading questions affecting the organization of the medical profession.

VIENNA

(From Our Regular Correspondent)

Dec. 15, 1924.

Occupational Diseases of the Skin

At a recent weekly session of the Medizinisches Doktoren Kollegium, Professor Oppenheim delivered an address on industrial skin injuries. He distinguished the following types of injuries: (1) stigmas; (2) burns, eschars, frost-bite, lesions due to irradiation (radium, roentgen rays, electricity); (3) affections of the sweat and sebaceous glands; (4) nail changes; (5) toxicodermas; (6) dermatitis; (7) eczemas; (8) hypertrophies, atrophy, pigmentation; (9) malignant and benign tumors; (10) infectious diseases. The stigmas often have also a medicolegal interest. Injuries to the hands and fingers are especially frequent; the brownish discoloration of the nails of cabinet-makers is due to the work of polishing, also the black staining of the skin results from the use of stains; in metal workers, tinsmiths and smiths the skin of the fingers is traversed by parallel fissures or a congeries of intersecting lines (transient stigmas). Over the patella in cobblers, on the shoulders of porters, and on the hands of smiths, tailors and leather workers, will be frequently found callosities, or a thickening of the horny layer of the epidermis, which naturally develop as an aid to workmen in their particular callings. As more permanent stigmas he mentioned the scars and tattooings of workmen in munition plants due to powder explosions; also the hyperkeratoses on the chest in cobblers. Burns of the dorsal surface of the foot resulting from molten iron are frequent in iron-founders; burns of the hands from gasoline explosions in chauffeurs—also in glove cleaners. Burns from flat-irons in tailors, and from a short circuit in electrical workers, are typical. Eschars due to acids are easily recognizable: sulphuric acid shows a black margin and bluish gray scurf; nitric acid causes a sulphur-yellow discoloration. Unslaked lime, chromic acid and solution of sodium silicate produce ulcerous discolorations; carbid causes small, punctiform ulcers. Electricity occasions small, punctiform necroses and deep, third-degree burns. The chronic roentgen-ray injuries of the skin in persons who work a great deal with roentgen rays are white scars, telangiectasias, pigmentations, atrophy—often also roentgen-ray eczemas and ulcerations, which are difficult to heal and are not infrequently the beginning of a carcinoma. Acne, comedones and folliculitis are frequent among workers in petrolatum, petroleum, benzin or asphalt, especially on the chest and back. Affections of the nails occur in cake bakers or confectioners (paronychia, onychia, onychoptosis, often combined with dental affection). Nail affections are common also among watchmakers, cartridge makers and workers in indigo. In photographers, the use of caustic potash solutions often destroys the nails. The nails of laundresses commonly become crescent-shaped and loosened from the nail-bed (partial onycholysis). The cases of dermatitis constitute the most important group. Among the causes are anaphylaxis, idiosyncrasy and hypersensitiveness. Oppenheim distinguishes between toxicoderma, eczemas and circumscribed dermatitis. Sensitive cabinet-makers and wood workers often acquire an erysipeloid dermatitis when working with resinous wood. Occasionally, bullae and edemas arise in the region of the

face when persons are working with certain plants or their derivatives (iodin, ethereal oils). In many cases it is not the material that is being handled that causes the dermatitis but the detergents, or the heat, dust and soot. As a rule, occupational eczemas are more marked on the right hand—and especially on the volar surface. Warts may be counted among the hypertrophic formations. They are frequently found among workmen who use impure petrolatum or gasoline; also in actors who are compelled to use contaminated petrolatum to remove their makeup. During the war, many wart and pigment formations were observed as the result of flour that had been adulterated with the horse-bean *(Vicia faba)*. Atrophy of the skin is common in anilin workers, laundresses and barbers; also in field workers, where it is allied to pellagral conditions. Chemney-sweeps' cancer, which was formerly frequent, is now very rare with us, but in workers with paraffin and arsenic, papillomas in the scrotal region are observed. Of the infectious diseases, impetigo caused by the staphylococcus and streptococcus, in workers in fats and in hides and leathers, is frequent, being often combined with eczema; furthermore, an erysipeloid *(Schweinerotlauf)* is found among butchers. Glanders is not infrequent in workers in stables, during the course of which destructive processes take place in the region of the mouth and nose. Anthrax is often seen in furriers, workers in hides, and in broom-makers. Cowpox infection in milk-maids, trichophytia and dermatitis follicularis due to mites in workers in dried fruits and in barbers and hostlers, and primary syphilis of the hand in physicians and midwives are not so exceedingly rare.

As regards prophylaxis, the choice of an occupation is important. Blonds have not the same resistance as those with a brown or dark complexion. Seborrhea, ichthyosis and other skin diseases increase the predisposition toward an affection; persons so affected should therefore not engage in work requiring the handling of irritative substances. Rubber gloves, good oils and soap for cleaning, baths, frequent change of linen, good ventilation, and reduction of the heat, dust, smoke and soot in the industrial plants, are important aids for the promotion of health among workmen. Once an affection has been acquired, the first thing necessary is to discontinue the injurious work. In the presence of hypersensitiveness, it may be desirable to desensitize the patient before he returns to work. Instruction of workmen in regard to prophylaxis is an exceedingly important and necessary measure in the interest of public health.

Statistics of the Mortality from Cancer and Tuberculosis in Vienna

The statistical bureau of the city of Vienna has recently published a report on the mortality during the period from 1915 to 1923. It will be seen from these figures that the number of deaths from tuberculosis in proportion to the total number of deaths is decreasing, while the percentage of deaths from cancer shows an increase. For purposes of comparison, the adjoining table is given.

Year	Total Number of Deaths	Deaths from Tuberculosis Number	Deaths from Tuberculosis Percentage	Deaths from Cancer Number	Deaths from Cancer Percentage
1915.....	37,018	7,810	21.0	2,846	7.6
1916.....	37,631	9,651	25.6	3,091	8.2
1917.....	46,131	11,741	25.4	3,040	6.5
1918.....	57,497	11,531	22.3	2,672	5.1
1919.....	40,932	10,606	25.9	2,604	6.4
1920.....	34,179	7,464	21.8	2,423	7.0
1921.....	28,297	5,265	18.6	2,618	9.2
1922.....	30,068	5,552	18.4	2,769	9.2
1923.....	25,480	4,630	18.1	2,824	11.0

One might conclude from these statistics that cancer (and other malignant neoplasms), taken absolutely, were on the increase in Vienna. But, in order correctly to interpret these figures, it should be noted that from 1915 to 1918 a different combination of causes of death was in operation than at present, because we had many deaths due to infections and wounds (consequences of war). The basis of comparison for the five year period from 1919 to 1923 is changed. The number of deaths from tuberculosis during this quinquennium is less than before the war, because, during the war, a large number of tuberculous persons died prematurely. Then, again, the representation among the various age groups is now different than it was before the war. The number of births has greatly decreased. There are therefore much fewer deaths among the 0-1 age group and the 1-6 age group. The deaths affect relatively more the older age groups, so that the percentage of deaths from cancer in relation to the total number of deaths would be relatively higher than before or during the war. In order to get a correct conception of the cancer mortality and the incidence of cancer, we must consider the absolute number of cancer deaths as they occur in the older age groups, say from 35 to 40 and upward. From 1914 to 1922, the population of Vienna decreased by 250,000. The number of children and juveniles diminished; likewise the members of the 20-40 age group; that is, the *"nicht Krebsreifen"* (those who had not reached the cancer age). On the other hand, the number of the *"Krebsreifen,"* or of those who had reached the cancer age, had increased. In 1910 there were 562,000 persons (254,000 men and 308,000 women) upward of 40 years of age. In 1920 the number had increased to 643,000 (294,000 men and 349,000 women). The adjoined statistical table contains the absolute number of deaths from cancer among the permanent population of Vienna, excluding the transient residents (brought to the hospitals from outside).

Deaths from Cancer Among the Population of Vienna

Year	Deaths Among Citizens	Deaths Among Transients	Total	Percentage of All Deaths
1913.....	2,600	311	2,911	8.7
1914.....	2,619	269	2,808	8.6
1922.....	2,514	255	2,769	9.2
1924.....	2,585	239	2,824	11.0

It is evident, therefore, that, in spite of the decrease in the population of the city of Vienna, and the relative increase of the older age groups, the absolute number of deaths from cancer has remained virtually stationary. There is no justification for the assumption that cancer is on the increase.

Marriages

JOHN HENRY BUMSTEAD, New Haven, Conn., to Miss Katherine McAllister of Baltimore, Dec. 3, 1924.

PETER PAUL LAWLOR, Burlington, Vt., to Miss Marie Boezinger of Palo Alto, Calif., Nov. 26, 1924.

JUDSON ARLINGTON VAN DER HULSE, to Miss Jessie Phillips, both of Akron, Ohio, Oct. 11, 1924.

WILLIAM H. STOKES, Ann Arbor, Mich., to Miss Margaret Scott of Lake City, Sept. 27, 1924.

HARRY L. BROOKS, Michigan City, Ind., to Miss Florence Tometz of Chicago, Oct. 10, 1924.

A. ALVIN MARTIN to Miss Eleanor Rose Walker, both of Toronto, Ont., Canada, recently.

JOHN R. SHOTWELL to Miss Maud Garland Miller, both of Curryville, Mo., Dec. 14, 1924.

RALPH E. BROOKS, Burlington, N. C., to Miss Lucy E. Hatch of Greensboro, Nov. 1, 1924.

SIDNEY LITTMAN, Cleveland, to Miss Grace Valentine, Kensington, Ohio, recently.

MORRIS WILLIAM LEV to Miss Adele Iglowitz, both of Chicago, Nov. 27, 1924.

BRADFORD KENT to Mrs. Jeanne Hunter Tanner, both of Boston, recently.

Deaths

Norman Bridge ✠ emeritus professor of medicine, Rush Medical College, Chicago, died in Los Angeles, January 10. Born in Vermont in 1844, Dr. Bridge entered the University of Michigan Medical School, Ann Arbor, in 1866, graduating from the Chicago Medical College in 1868 and from Rush Medical College in 1878. Almost immediately after graduation, he became a member of the faculty at the Chicago Medical College, and a few years later entered the faculty of Rush, with which he was connected until the time of his death. In 1872 he was one of the publishers of the first volume of the Chicago Medical Register and Directory, and later became an associate editor of the *Chicago Medical Journal and Examiner*. Dr. Bridge was instrumental in building the Cook County Hospital and later the Presbyterian Hospital; he was a member of the Chicago Board of Education, 1881-1884; president, 1882-1883, and a member of the board of election commissioners from 1886 to 1890. He gave up a large practice in Chicago in 1892 on account of poor health and moved to Los Angeles. Here he held various public offices, among them membership on the board of freeholders which framed the new charter for Pasadena. He was one of the pioneers in tuberculosis work in southern California, and the author of "Lectures on Tuberculosis," "The Penalties of Taste," "The Marching Years" and many essays contributed to medical journals and books. Dr. Bridge was honored by many colleges and scientific societies, and was a member of the Illinois State Medical Society, the American Climatological and Clinical Association, the Association of American Physicians and the Chicago Institute of Medicine. He founded and endowed the Norman Bridge Laboratory of the California Institute of Technology, and made large gifts to Rush Medical College and other educational and charitable institutions.

David Gregg Metheny, Philadelphia; Jefferson Medical College of Philadelphia, 1896; L.R.C.P., Edinburgh, L.R.C.S., Edinburgh, and L.R.F.P.S., Glasgow, 1901; professor of anatomy and histology, Temple University Department of Medicine, Philadelphia; formerly assistant demonstrator of anatomy, and assistant professor of systematic and regional anatomy at his alma mater, also curator, anatomical museum, Woman's Medical College of Pennsylvania, and professor of anatomy, Baylor University College of Medicine, Dallas, Texas; member of the Association of Anatomists; aged 51; died, Dec. 15, 1924, at the Jefferson Hospital, of angina pectoris.

William Otway Owen ✠ Colonel, U. S. Army, retired, Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1878; appointed assistant surgeon, 1882; retired on account of disability in the line of duty, 1905; recommissioned as colonel, by act of Congress in 1916; curator, Army and Medical Museum, 1916-1918; professor of anatomy, Georgetown University School of Medicine, Washington; aged 70; died, Dec. 26, 1924, of heart disease.

Alonzo Byron Walker ✠ Canton, Ohio; Jefferson Medical College of Philadelphia, 1881; past president of the Stark County Medical Society; consulting surgeon to the Aultman Memorial Hospital, Canton, and the Tuscarawas County Children's Home, Dover; aged 73; died, Dec. 25, 1924, following a long illness.

Charles A. Haines, Sayre, Pa.; College of Physicians and Surgeons, Baltimore, 1880; member of the Medical Society of the State of Pennsylvania; on the staff of the Packer Hospital; aged 67; died in December, 1924, as a result of an injury incurred while alighting from his automobile.

Thomas W. Bailey ✠ Greenville, S. C.; College of Physicians and Surgeons, Baltimore, 1886; past president of the Greenville County Medical Society; aged 63; died, Dec. 17, 1924, at the Greenville City Hospital, of intestinal obstruction, following an abscess of the appendix.

Herbert Llewellyn Smith ✠ Nashua, N. H.; Medical School of Harvard University, Boston, 1887; past president of the New Hampshire Medical Society; formerly on the staff of the Boston City (Mass.) Hospital; aged 62; died suddenly, Dec. 19, 1924, of heart disease.

William Beckford Kibbey, Marshalltown, Iowa; Medical School of Harvard University, Boston, 1882; formerly member of the city council and mayor; for six years member of the school board; aged 68; died, in December, 1924, at a sanatorium in Kansas City, Mo.

James Francis Murphy, Fort Benton, Mont.; Jefferson Medical College of Philadelphia, 1909; served in the M. C., U. S. Army, during the World War; aged 49; died, Dec. 15, 1924, of a wound, self-inflicted, while suffering from ill health.

Joseph Harvey Stapp ✠ Hardin, Mo.; Kansas City Medical College, 1899; served in the M. C., U. S. Army, during the World War; proprietor of a sanatorium bearing his name; aged 48; was accidentally shot and killed, Dec. 26, 1924.

George Seiler, Monroe, Wis.; University of Berne, Switzerland, 1865; formerly health officer of Monroe; aged 79; died, Dec. 14, 1924, at the Hahnemann Hospital, San Francisco, of shock, following an operation on the prostate.

Dorcas Laura Lowell Ballard, Alameda, Calif.; Cooper Medical College, San Francisco, 1889; aged 75; died, Dec. 18, 1924, at the Old People's Home, San Francisco, of cerebral hemorrhage and senility.

Frank Schlachter, Philadelphia; Jefferson Medical College of Philadelphia, 1924; intern, St. Joseph's Hospital; aged 26; was found dead, Dec. 21, 1924, from the effects of poison, presumably self-administered.

Henry Nicholas De Menil ✠ St. Louis; Washington University Medical School, St. Louis, 1904; served in the M. C., U. S. Army, during the World War; aged 45; died, Dec. 20, 1924, of heart disease.

Cecil John Handke, Brooklyn; Northwestern University Medical School, Chicago, 1921; on the staff of the King's County Hospital, Brooklyn, where he died, recently, of acute myocarditis, aged 28.

Francis J. Lee ✠ Grand Rapids, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1896; on the staff of the Blodgett Hospital; aged 56; died, Dec. 21, 1924, of pernicious anemia.

James A. Austin, Charlotte, N. C.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Society of the State of North Carolina; aged 64; died, Dec. 16, 1924, of heart disease.

James Barry Martin, Traverse City, Mich.; University of Michigan Medical School, Ann Arbor, 1881; president of the People's Savings Bank; aged 69; died, Dec. 13, 1924, following a long illness.

Shelby Chadwick Carson ✠ Greensboro, Ala.; Medical Department of the Tulane University of Louisiana, New Orleans, 1890; aged 78; died, Dec. 14, 1924, of cerebral hemorrhage.

Edward Lincoln Williamson, Berkeley, Calif.; Columbia University College of Physicians and Surgeons, New York, 1892; aged 60; died, Dec. 10, 1924, of carcinoma of the pancreas.

George Schuyler Bangert, East Orange, N. J.; Long Island College Hospital, Brooklyn, 1912; on the staff of the Orange (N. J.) Memorial Hospital; aged 39; died, Dec. 10, 1924, of influenza.

Edwin McLean Northcott ✠ Portland, Me.; Rush Medical College, Chicago, 1877; medical director, Union Mutual Life Insurance Company for thirty years; aged 75; died, Nov. 30, 1924.

Frank T. Fitzgibbon, San Francisco; University of California Medical School, San Francisco, 1894; aged 52; died, Dec. 18, 1924, at St. Francis Hospital, of chronic myocarditis.

Ovide Martel, Tampa, Fla.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1883; aged 66; died, Oct. 30, 1924, at Montreal, Que., of heart disease.

George William Collins, New York; Bellevue Hospital Medical College, New York, 1885; formerly a lawyer; aged 64; died, Dec. 15, 1924, of heart disease.

Napoleon B. Null, Ruston, La.; Medical Department University of Louisiana, New Orleans, 1877; aged 82; died, Dec. 10, 1924, at Shreveport, of senility.

Samuel R. Geiser, Cincinnati; Pulte Medical College, Cincinnati, 1875; on the staff of the Bethesda Hospital; aged 74; died suddenly, in December, 1924.

John Clark, Smethport, Pa.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1891; aged 64; died, Dec. 16, 1924, following a long illness.

Nicholas J. Worthington, Guelo, South Rhodesia, South Africa; University of Virginia Department of Medicine, 1894; died, Nov. 13, 1924, of pneumonia.

Courtney Bloomfield Clark ✠ Troup, Texas; Baylor University College of Medicine, Dallas, 1914; aged 44; died, Dec. 10, 1924, of carcinoma.

William H. McCaw, Winfield, Iowa; College of Physicians and Surgeons, Keokuk, 1878; aged 81; died, Dec. 16, 1924, at Colon, Neb., of senility.

Thomas Walter Curry ✠ Streator, Ill.; Northwestern University Medical School, Chicago, 1898; aged 53; died, Dec. 13, 1924, at London, England.

Howard Elliott Henderson, Bellingham, Wash.; Rush Medical College, Chicago, 1887; aged 62; died, Dec. 17, 1924, following a long illness.

Jasper D. Phillips, Tyler, Texas; Medical Department University of Louisiana, New Orleans, 1882; aged 66; died suddenly, Dec. 18, 1924.

Samuel P. Green, Fruita, Colo.; Missouri Medical College, St. Louis, 1882; aged 67; died, Dec. 12, 1924, of carcinoma of the bladder and uremia.

Rose E. McCaughna, Chicago; University of Michigan Medical School, Ann Arbor, 1890; aged 67; died, Dec. 12, 1924, of heart disease.

Julius Augustus Davies, Walls, Miss.; University of Nashville (Tenn.) Medical Department, 1879; aged 69; died suddenly, Dec. 21, 1924.

John W. Sexton, Spartanburg, S. C.; Leonard Medical School, Raleigh, N. C., 1906; formerly a druggist; aged 48; died, Dec. 21, 1924.

Merle Casey ✠ Almond, Wis.; Milwaukee Medical College, 1901; aged 52; died, Dec. 27, 1924, at St. Agnes Hospital, Fon du Lac, Wis.

Edward McBurney, Jackson Center, Ohio; Fort Wayne (Ind.) College of Medicine, 1885; Civil War veteran; aged 79; died, Dec. 13, 1924.

John B. Brasseur, Norway, Mich.; University of Liége, Belgium, 1888; aged 62; died suddenly, in December, 1924, of heart disease.

Frank Erwin Carpenter, Brooklyn; Long Island College Hospital, Brooklyn, 1883; aged 66; died, Dec. 20, 1924, of heart disease.

William Madison Gipson ✠ Lytle, Texas; Memphis (Tenn.) Hospital Medical College, 1896; aged 49; died, Dec. 13, 1924, of carcinoma.

Jesse B. J. Gilliam, Italy, Texas; Vanderbilt University Medical Department, Nashville, Tenn., 1877; aged 75; died, Dec. 10, 1924.

Jane M. Baker, Danbury, Conn.; Eclectic Medical College of the City of New York, 1882; aged 72; died, Nov. 9, 1924, of nephritis.

Louis N. Hyden, Coal Hill, Ark. (licensed, Arkansas, 1903); member of the Arkansas Medical Society; aged 70; died, Dec. 28, 1924.

George W. Wilkinson, Milesville, S. D.; Rush Medical College, Chicago, 1857; Civil War veteran; died, Dec. 23, 1924, of senility.

Joseph Fitz-Mathew, West Sound, Wash.; Hahnemann Medical College of Philadelphia, 1875; aged 82; died, Dec. 14, 1924.

Wenceslaus John Dvorak ✠ Chicago; Rush Medical College, Chicago, 1896; aged 61; died, January 1, of carcinoma of the bladder.

James M. Miller, Techny, Ill.; Jefferson Medical College of Philadelphia, 1868; aged 81; died, Sept. 15, 1924, of pernicious anemia.

John James McCall, Albany, N. Y.; Albany Medical College, 1910; aged 48; died, Sept. 4, 1924, of chronic nephritis and uremia.

J. Byvanche Dickinson, Cismont, Va.; Medical College of Virginia, Richmond, 1893; aged 55; died in December, 1924.

Frank B. Richtstine, Sunbury, Pa.; Hahnemann Medical College of Philadelphia, 1878; aged 74; died, Dec. 15, 1924.

John Thomas Paul Jones, Boston; Boston University School of Medicine, 1901; aged 50; died, Dec. 13, 1924.

Charles Seth Evans, New York; Medical College of Ohio, Cincinnati, 1887; aged 63; died, Dec. 19, 1924.

T. M. Righter, Cynthiana, Ky.; Pulte Medical College, Cincinnati, 1903; aged 48; died, Dec. 16, 1924.

Corwin Griffin, Clyde, Ohio; Pulte Medical College, Cincinnati, 1876; aged 78; died, Dec. 12, 1924.

Elbert Tillman Gauntt, Ofelia, Ala.; Atlanta (Ga.) Medical College, 1878; aged 80; died, Dec. 4, 1924.

Charles W. Boyer, Dallas, Texas (licensed, Tennessee, 1896); aged 79; died, Dec. 14, 1924.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

LOEFLUND'S FOOD MALTOSE NOT ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Loeflund's "Food Maltose" is manufactured by Ed. Loeflund and Company, Grunbach, Germany, and marketed in the United States by Britt, Loeffler and Weil, New York. It is a dextrin maltose mixture offered as a medicinal food and is stated to have the following composition: dextrin, 59.7 per cent.; maltose, 40 per cent., and sodium chlorid, 0.3 per cent.

The statement of composition shows that dextrin is the preponderating constituent of Loeflund's Food Maltose and that maltose constitutes but 40 per cent. of the mixture. The preparation is, therefore, incorrectly named. Accordingly, the Council informed Britt, Loeffler and Weil that it could not accept the product unless a correctly descriptive name was adopted for it. This the firm, after taking the matter up with its principal, Ed. Loeflund and Company, refused to do.

The Council declared Loeflund's Food Maltose unacceptable for New and Nonofficial Remedies because it is marketed under an incorrect and misleading name.

COLON BACILLUS VACCINE, GONOCOCCUS SERUM AND GONOCOCCUS VACCINE OMITTED FROM N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Colon Bacillus Vaccine.—In 1921 the Council decided that the article on Colon Bacillus Vaccine, and with it the accepted preparations, would be omitted from New and Nonofficial Remedies when the period had expired for which the preparations stood accepted, unless new evidence obtained in the meantime warranted a different course.

The period of acceptance of the preparations now in New and Nonofficial Remedies expires with the close of 1924. No acceptable evidence has been brought forward to show that a stock bacillus coli vaccine is of therapeutic value. Therefore, the Council directed that the article on colon bacillus vaccine be omitted from New and Nonofficial Remedies, 1925, and with it the brands that now stand accepted.

Gonococcus Serum and Gonococcus Vaccine.—In 1921 the Council decided to omit the article on Gonococcus Serum and the accepted brands and the article on Gonococcus Vaccine and the accepted brands from New and Nonofficial Remedies when the period for which the preparations now accepted had expired, unless evidence should develop in the meantime permitting a different course.

The Council took this action because experience with these preparations has not established the value which it was hoped they possessed and because recognized experts to whom the Council looks for help have concluded that gonococcus serum and gonococcus vaccine have no field of usefulness.

The period of acceptance of the preparations of gonococcus serum and gonococcus vaccine now in New and Nonofficial Remedies expires with the close of 1924. No new evidence has developed to show that these preparations have therapeutic value. Therefore, the Council directed the omission from New and Nonofficial Remedies, 1925, of the articles on gonococcus serum and on gonococcus vaccine and with these the accepted preparations.

CARSINOL NOT ADMITTED TO N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized the following report for publication. W. A. PUCKNER, Secretary.

Carsinol, "the Personal Germicide," is marketed by the "Carsinol Research Laboratories," St. Joseph, Mo. In the advertising it is stated that "Carsinol is a new and novel germicide, developed through four years of diligent research," and that its chemical name is "ortho-phenol-mercuric-chlorate." In the information furnished the Council, the following chemical formula is assigned to the preparation: $C_6H_4OH\ HgClO_3$. However, while these statements assert that Carsinol is a definite chemical substance, the Carsinol label contains the admission, probably in conformity with the requirements of the federal insecticide law, that the product contains "Inert ingredients: Water not over 88.03 per cent." In consideration of this discrepancy between the claims and the statement on the label, the Council requested the A. M. A. Chemical Laboratory to check the claims of composition. The following is the report of the Association chemists:

LABORATORY REPORT

"Two original specimens of Carsinol (Carsinol Research Laboratories, Inc., St. Joseph, Mo.) were submitted to the A. M. A. Chemical Laboratory by the Council on Pharmacy and Chemistry. According to the label, Carsinol is an 'odorless—stainless, non-poisonous, non-irritating' germicide. 'Inert ingredients not over 88.03 per cent.' In the information submitted, it was stated to be 'ortho-phenol-mercuric-chlorate. $C_6H_4OH\ HgClO_3$.' Each bottle contained about 190 c.c. (approximately 6 fluidounces) of a yellow liquid having a slightly alkaline reaction. Qualitative tests indicated the presence of sodium, mercury, chlorate, a substance resembling phenol and a small amount of chlorid. Quantitative estimations yielded the following:

Specific gravity at 25 C	1.083	
Loss in weight at 100 C	87.82	per cent.
Sodium (Na^+)	2.53	per cent.
Mercury (Hg^{++})	0.075	per cent.
Chlorate (ClO_3^-)	9.19	per cent.
Phenol-like substance (as phenol)	0.02	per cent.

"From the analysis, Carsinol is essentially a solution containing 11.7 per cent. by weight of sodium chlorate, 0.01 per cent. of mercuric chlorid (1 part to 10,000 parts of water) and 0.02 per cent. phenol (1 to 5,000). Assuming the product to contain 88 per cent. water (as declared on the label), the amount of mercury present is approximately $\frac{1}{75}$ of that claimed according to the chemical formula submitted by the manufacturer, while there is four times as much chlorate ion (ClO_3^-) present. The claimed composition for the product, therefore, is obviously false and misleading."

The advertising that accompanies the trade package contains misleading statements, such as these:

"The odorless properties of CARSINOL makes its use ideal in contagious disease cases. Dip a large sheet in a 1% solution of CARSINOL (a 6-oz. bottle makes 4 gallons), and hang up in the sickroom. This causes the germs in the air to deposit on the sheet and lessens the danger of contagion."

This absurd claim has been criticized so frequently that its use by "Research Laboratories" is surprising.

"Personal cleanliness, before the introduction of CARSINOL, was accomplished only at the risk of danger to life and tissues, intense irritation, and unpleasant odors. Bichloride of mercury, phenol and cresol compounds not only irritate the membranes of the body, but are also strong poisons."

In consideration of the report of the A. M. A. Chemical Laboratory, these assertions cannot be accepted.

"Carsinol is indispensable for proper, safe personal hygiene." By statements such as these the promiscuous use of the vaginal douche is encouraged and the public invited to place false dependence on this "Personal Germicide."

The Council declared Carsinol inadmissible to New and Nonofficial Remedies because it is marketed under a false statement of composition and a nondescriptive name, and under unwarranted therapeutic claims that may lead the public to place dependence on it.

Correspondence

"ARSPHENAMIN DERMATITIS, MERCURIAL POISONING AND LEAD INTOXICATION"

To the Editor:—After reading the article of Drs. Charles C. Dennie and William L. McBride (THE JOURNAL, Dec. 27, 1924, p. 2082) permit me to warn all readers of some possible misunderstandings.

So far as dermatitis exfoliativa is concerned, what is claimed to be sodium thiosulphate in aqueous solution, when given intravenously, seems to be beneficial.

In that form of acute arsenic poisoning characterized by glandular destruction and presenting the signs and symptoms that accompany the partial or complete loss of function of the involved organs, permit me to warn all that, even though directions are followed carefully and the so-called aqueous solution of sodium thiosulphate is the drug used, the physician is many times disappointed and the result disastrous.

In the chronic forms of arsenic poisoning, I doubt the value of the drug in question very much.

As for mercurial poisoning due to the ingestion of mercuric chlorid, one should always give credit to the emergency measures which, when carefully carried out, tend to limit the absorption of the poison. After absorption has occurred, one may hazard a guess as to the value of any such drug as sodium thiosulphate, or even prove it by repeating such a work as that of Sansum (THE JOURNAL, March 23, 1918, p. 824) using thiosulphate as the antidote in question.

After two years as a member of the resident staff of Kansas City General Hospital, my opinion is not as optimistic as that of Dr. Dennie. I believe that the results obtained in our poison cases caused by swallowing mercuric chlorid were largely due to the well organized emergency service, and that was to limit absorption to a minimum. When any signs or symptoms presented themselves which indicated absorption, our results were the same as elsewhere. I doubt the value of sodium thiosulphate in cases in which the lethal dose has been absorbed; and the lethal dose is a variable factor in different patients.

I fear that Dr. Henry H. Hazen of Washington, D. C., would be surprised were he to check his remarks by using the muscle of live animals to prove or disprove them. I feel that by following arsphenamin infiltration with sodium thiosulphate infiltration, the condition is aggravated. I may be wrong, but the patients complained more afterward.

HARRY LUTZ, M.D., Augusta, Kan.

DRAINAGE OF APICAL ABSCESSES OF TEETH

To the Editor:—The answer to "M.D.'s" request as to whether a dentist was correct in saying that extraction was entirely unnecessary in the case of four apical abscesses as shown by the roentgen-ray examination, in the Queries and Minor Notes department of THE JOURNAL, Dec. 11, 1924, appears to me misleading, since it represents only one side of even the dental attitude in the matter, leaving out of all account the convictions of medical men who have carefully investigated the subject. The dental profession, as shown by a questionnaire by Darling sent to 150 dentists prominent in different parts of the United States (*J. Radiol.* **4**:39 [Feb.] 1923) in answer to Question I (a), "What is your present opinion as to extraction in the case of a tooth that shows definite periapical pericemental destruction?" stands 56 per cent. in favor of extraction; 10 per cent in favor of treatment first, but extraction at once if treatment fails, and 34 per cent. in favor of treatment, or undecided as to procedure.

In answer to I (b), "What is your present opinion as to extraction in the case of a tooth that shows definite peri-

apical rarefaction or chronic abscess?" 48 per cent. are in favor of extraction; 40 per cent. in favor of trying treatment first, and 12 per cent. in favor of treatment.

Medical literature shows that the physicians who have investigated the bacteriology, pathology and clinical results of this subject generally favor extraction of the teeth showing destructive disease about their roots; and the further tendency now is to extract all devitalized, pulpless or dead teeth.

As to the term "dead teeth," the matter is equally debatable. Since common practice for centuries has recognized these as "dead teeth," certainly the burden of proof is on those who would make it out otherwise. To be sure, such teeth are not all exfoliated at once; but they are shown, even so, to be the depository or the potential source of infection in the majority of cases, after six months or a year, whether with canals filled and no evidence of disease, or "cured" by the dental treatments. This subject has been covered many times from many angles, as shown by the literature of Rosenow, Duke, Grieves, Billings, Black, Darling, Head, Hunter, Moorehead, Pond, Potter, Thoma and Vaughan.

Also it has been shown that of those bacteriologists who have produced negative results, some were not using favorable technic, such as suitable culture mediums and oxygen tension.

In spite of the unreconciled dentist, physician or patient who strongly asserts and stoutly maintains to the contrary, it appears that the next generations of dentists and physicians are going to be taught that the value of the pulpless, devitalized or dead tooth is offset by its potential menace to the health of the subject; and the trend is clear that immediate extraction will be the safer preventive position.

BYRON C. DARLING, M.D., New York.

"THE PRODUCTION OF ANTISCORBUTIC VITAMIN BY GERMINATION"

To the Editor:—I read with interest your editorial of Dec. 27, 1924, on this subject. I refer particularly to the following:

> The raw milk, whole wheat, crude fats and fresh vegetables of one or two generations ago have to a large extent become pasteurized or evaporated milks, patent flour, refined or hydrogenated oils and canned foods in this day.
>
> Most of the changes represented involve features that have something to recommend them. We are not so reactionary as to assert that the old is always better than the new and that innovations in food manufacture have no redeeming aspects. In respect to antiscorbutic properties, however, it must be frankly admitted that the changes have as a rule been attended with a decrease of vitamin C. This has proceeded to such an extent that intelligent dietitians are alert to the need of supplying antiscorbutics, notably in the form of fresh fruits or fruit juices and fresh vegetables. It is not generally recognized that man has it within his power to produce antiscorbutic vitamin readily by the simple device of germinating certain seeds.

I wish to speak of your inference regarding fresh vegetables and canned foods. You imply that they are different, while, as a matter of fact, are not canned vegetables fresh vegetables? Vegetables such as peas, string beans, spinach, asparagus and sweet corn cannot be eaten in the raw state. These vegetables canned, therefore, should properly be designated as cooked vegetables. Their freshness depends on the time intervening between harvesting and canning. The ideal way is to grow your own vegetables and harvest them when ready to cook them; but as that is not always possible, particularly over about eight months of the year, there must be substitutes for this procedure.

Some members of the canning industry have adopted the slogan, "Fresh from the fields"; and there is no question that vegetables are canned in a fresher state than they can be purchased raw in the city market. This may in part explain the recent findings that canned vegetables are much richer in antiscorbutic vitamin than the same vegetables when purchased raw in the city market, and home cooked.

Another explanation which suggests itself is that the canned vegetables are cooked in hermetically sealed containers and therefore in the absence of oxygen, which is the big destructive factor in cooking.

You suggest germination of seeds as an implied remedy for supplying vitamins lost because of the use of canned vegetables. In the *American Journal of Physiology* (**59**:310), Santos, working with Professor Mendel of Yale University, reports that togi, which is sprouted mongo, when fresh is relatively rich in vitamin C, but that after it is prepared "for culinary use," the vitamin C is destroyed. Delf (*Biochemical Journal* **12**:416, 1918) likewise reports that cooking sprouted lentils largely destroys the antiscorbutic vitamin.

Canned tomatoes have been reported by a number of investigators as rich as raw tomatoes in antiscorbutic vitamin. It is well known that tomatoes are a rich source of antiscorbutic vitamin.

In a forthcoming article on canned spinach in the January issue of *Industrial and Engineering Chemistry*, it is pointed out that raw spinach is richer in vitamin C than any substance so far reported, and that after canning it is equal in this respect to canned tomatoes, and is nearly as rich as orange juice.

Canned cabbage has been shown to be well supplied with antiscorbutic vitamin. Apples may be canned without any loss of vitamin C, and a few months later are richer in this vitamin than similar apples held in cold storage.

There is no evidence that the vitamins deteriorate on holding canned foods. There is considerable indicative evidence that they do not. From all the evidence available at present, canned vegetables are one of the richest sources of antiscorbutic vitamin, available throughout the year and in any region.

EDWARD F. KOHMAN, Washington, D. C.

[COMMENT.—Our correspondent gives a fair presentation of conditions in 1924 under the most favorable methods of preservation. A few years ago, dried milks were short of vitamin C. Today they are desiccated so as to preserve the antiscorbutic potency. Of course, the editorial referred to the demonstration of how one can produce vitamin C easily by the simple process of germination.—ED.]

MEDICAL EDUCATION AND THE RURAL PHYSICIAN

To the Editor:—I have been reading the editorials in regard to medical education and the supply of rural physicians. The summary arrived at by the General Educational Board (THE JOURNAL, January 3, p. 41) is about as nearly correct as it is possible to make it. I have been practicing here more than sixteen years, and came here because I like country life, as many other physicians do. I am located in a town of about 450 population and a rural population of about 900. There are so many poor people who cannot pay that it leaves too few pay patients to make it remunerative. I have college degrees, and I cannot see where a shorter course would have benefited me. The country people are entitled to good physicians as well as those in larger places. A shorter or altered curriculum in our medical schools would not alter the financial or economic conditions one iota. We should stick to our high standards of medical education.

The lack of physicians in our rural districts is not due to defects in our curriculums. It should not "evoke various hypotheses," as there is a tangible cause, as those who have practiced in these communities can verify. The chief cause is inadequate financial returns; that is the reason there are so many communities without physicians, and the list is growing larger all the time. The physicians are virtually starved out. From what I know of these small towns, I would never locate or advise any one to locate in one unless

the community would guarantee me a stipulated amount a year, as they are doing in many places in our Middle Western states, also occasionally in the East.

Now to elucidate the cause of the lack of financial returns:

1. The farmers have been hard pressed the last few years; the price of farm products has not been commensurate with the high cost of living. They have invested in high priced land, automobiles, trucks, tractors and other things that brought little financial return, but to the contrary have boosted centralized industry in the East. The farmers and rural financiers have not learned to keep some of their money at home.

2. Good roads and automobiles take the people to county seats and other places.

3. Other businesses are run on a cash basis, with the consequence that the physician is left out, because there is not enough money to go round.

The remedy is not with our medical schools. Alteration of their curriculum would not help. There are no short cuts to a proper medical education.

The remedy is with the medical profession and the people. There must be some way found out whereby the physician will get paid for what he does as well as the man who sells automobiles, trucks, tractors and other things. Commercialism should not dominate the medical profession, but some way should be found whereby the rural physician may come into his own.

We do not want "state medicine," but if too much community medicine develops in the country, we may have a hard fight to keep from it.

J. E. BROSSEAU, M.D., Frankfort, S. D.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

INTRADERMAL VACCINATION

To the Editor:—Would you kindly inform me as to the relative merits of the present intradermal method of vaccination, and its advantages over the old scratch method; also the technic. M.D., Wis.

ANSWER.—Various investigators abroad, particularly Hoffmann (*Schweiz. med. Wchnschr.* **51**:790 [Aug. 25] 1921), Singer (*Med. Klin.* **19**:1279 [Sept. 23-30] 1923), and Leiner and Kundratitz (*Ztsch. f. Kinderh.* **30**:205 [Sept.] 1921), have stated their views as to the desirability of intradermal vaccination against smallpox. J. H. Gettinger (*M. J. & Rec.* **120**:115 [Aug. 6] 1924), and recently Force at the University of California, have advocated this method of vaccination. To class the Force method with the intradermal method is likely to be confusing, for his description of the method used appears to be subcutaneous rather than intracutaneous. Apparently all the foregoing investigators agree that the advantages of the intradermal vaccination over the so-called "scratch method" may be thus summed up:

The constitutional reaction is milder; the fever is rare or of short duration; there is absence of pustulization and the resulting ugly scar; secondary infections and possible multiple vaccinations due to carelessness are eliminated.

Leiner and Kundratitz especially direct attention to the superiority of the intradermal method for cases in which there is danger of complication of existing dermatitis, or fear of infection of the pustule or contagion to others.

The diluted vaccine (Gettinger used 1:100 solution, Singer 1:40, and Force 1:40) is injected from a hypodermic syringe into the skin in 0.1 c.c. amounts. The needle is introduced into the skin and parallel to its surface for at least 1.5 cm.

The absence of a readily visible scar from the intradermal method is not an inconsiderable disadvantage, and persons so vaccinated, would, of necessity, have to be revaccinated for actual proof unless careful records are kept. The other disadvantage to be stressed is the length of time used in the preparation of the hypodermic injection in the field. On the other hand, sterile dressings ordinarily used in the so-called "scratch method" of vaccination could be eliminated, and this would compensate for the extra time necessary for the performance of the intradermal method. Likewise, the cost of vaccination would be correspondingly less. In addition, Force points out the value of the latter method (intradermal) if used as an indication of immunity to the disease.

The intradermal method is practically painless and possibly preferable to all others, but it requires more care in application, and the method should not be forced on the medical profession until more evidence of its practicability has accumulated.

A clear distinction should be made, however, between the intradermal and subcutaneous, as at present there is confusion of the two methods.

TUBERCULOSIS AMONG SCANDINAVIANS

To the Editor:—I was recently told that tuberculosis is more prevalent among the Scandinavian people (Norwegian, Swedish and Danish) than any other race with the exception of the American Indian. If this statement is so, is it true of the Scandinavian people when they live in their own countries or do they become more susceptible to tuberculosis on reaching this country? If so, what may be given as a plausible reason? As I am a field worker for a tuberculosis association and because I am of Norwegian descent, I shall be interested in knowing what statistics and information you have on this subject.

PALMA H. GRAHN, Milwaukee.

ANSWER.—A review of the literature does not indicate that tuberculosis is more prevalent among the Scandinavian people than any other race with the exception of the American Indian. In "Oxford Medicine," for example, we find this:

> Some races are more vulnerable than others. I have already alluded to the very high death rate from tuberculosis in the American Indians and in the negroes. Among the white races the mortality rate varies. The Irish, for example, have always suffered severely from pulmonary tuberculosis both at home and in places to which they have migrated. . . . It is frequently said of the Jews that they are relatively immune to tuberculosis. Whatever basis there may have been for this statement, it does not hold true for Jews living in congested portions of our large cities.

In "Epidemiology and Public Health," Volume I, Vaughan says:

> Italians notably have a low death rate from tuberculosis, while the Irish have a high death rate from this disease. In Framingham, where the tuberculosis incidence rate for the entire population was 2.16, the rate in the Italian stock was 0.58 and in the Irish 4.80.

Vaughan also quotes from Bushnell's discussion of immunity in relation to races; but there is not in this, as there was not in either of the two preceding discussions, any reference to Scandinavians. While this evidence is negative, it would seem that these authors would have drawn attention to any unusual amount of tuberculosis if it were present in the Scandinavian countries.

INFLAMMATORY DIARRHEA

To the Editor:—What is "inflammatory diarrhea," its symptoms and diagnosis? How does it differ from other diarrheal diseases of children? Its treatment? Is the injection of sterile water or saline solution into the peritoneal cavity "good treatment"; say a quart at a time and at intervals of several hours? The foregoing is the diagnosis and treatment given by a "specialist" in children's diseases.

PAUL E. WIESEL, M.D., Garfield, Wash.

ANSWER.—"Inflammatory diarrhea" is the term applied to those cases of diarrhea in which there is an inflammation of the intestine caused by an increased or changed activity of the bacteria normally present or by the introduction of other bacteria.

There are a number of bacteria capable of producing such an inflammation resulting in diarrhea and general symptoms. Dysentery and typhoid are well known examples. Fever, abdominal pains, and an increased number of stools containing pus and often blood, or both, are the outstanding symptoms of this type of diarrhea.

The diagnosis is based on the foregoing finding, the history of the development of these symptoms and the absence of other causes, and is made more definite by the examination of the blood and stools in a laboratory. The laboratory findings are of value in determining the exact type of bacteria producing the illness. The treatment depends to a great extent on the individual case. The diet and maintenance of

the fluid content of the body are of prime importance. In children, the water lost in the frequent loose stools is relatively great. Sufficient water often cannot be given by mouth. The giving of saline solution into the abdominal cavity is one of the most efficient methods of administering sufficient fluids. The quantity that may be given depends on the size and condition of the child. The procedure may be repeated as often as the saline solution is absorbed and the child's condition demands.

MERCUROCHROME-220 SOLUBLE IN SEPTICEMIA

To the Editor:—Please let me know who first used mercurochrome intravenously in the treatment of septicemic infections.

M.D., New York.

ANSWER.—The first reference in periodical literature appears to be the article by E. B. Piper: "Treatment of Puerperal Sepsis by Mercurochrome Intravenously" (*Am. J. Obst. & Gynec.* **4**:532 [Nov.] 1922).

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

CALIFORNIA: Los Angeles, Feb. 9-12. Sec., Dr. C. B. Pinkham, 906 Forum Bldg., Sacramento.

KANSAS: Topeka, Feb. 10. Sec., Dr. Albert S. Ross, Sabetha.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 26-29. Chief, Mr. Herbert J. Hamilton, State Education Bldg., Albany.

PENNSYLVANIA: Philadelphia, Jan. 27-31. Pres., Dr. I. D. Metzger, 322 Aiken Ave., Pittsburgh.

SOUTH DAKOTA: Pierre, Jan. 20. Dir., Dr. H. R. Kenaston, Bonesteel.

VERMONT: Burlington, Feb. 10. Sec., Dr. W. Scott Nay, Underhill.

Connecticut July Examination

Dr. Robert L. Rowley, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, July 8-9, 1924. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 37 candidates examined, 30 passed and 7 failed. Four candidates were licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University	(1923) 75.7, (1924, 10) 77.4, 79.6, 84.1, 84.6, 85.4, 86, 86.9, 87.4, 89.2		76,
George Washington University		(1922)	80.8
Tulane University	(1904) 75, (1924)		83.6
Boston University		(1922, 2)	75.6, 79.1
Harvard University		(1922, 2)	82.2, 87.3
Tufts College Medical School	(1924, 3) 77.4, 78.8,		80.4
Columbia University		(1924)	80.1
Long Island College Hospital		(1923)	75.9
University and Bellevue Hosp. Med. Coll.	(1914) 78.7, (1923)		88.6
Jefferson Medical College		(1924)	80.4
University of Pennsylvania		(1922)	90
Medical College of Virginia		(1924)	81.3
University of Virginia		(1922)	86.2
McGill University Faculty of Medicine		(1924)	79.8

College	FAILED	Year Grad.	Per Cent.
Georgetown University		(1924)	73.8
Boston University		(1923)	68.9
Tufts College Medical School		(1923)	63.8
Fordham University		(1916)	67.4
Long Island College Hospital		(1910)	65.6
Jefferson Medical College		(1924)	74.3
Medico-Chirurgical College of Philadelphia		(1914)	62.4

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Yale University		(1904)	New York
Johns Hopkins University	(1913), (1917)		Maryland
University of Maryland		(1889)	New York

Missouri June Examination

Dr. Cortez F. Enloe, secretary, Missouri State Board of Health, reports the written and practical examination held at St. Louis, June 16-19, 1924. The examination covered 21 subjects and included 105 questions. An average of 70 per cent. was required to pass. Of the 172 candidates examined, 159 passed and 13 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Licensed
Northwestern University	(1923, 2)	(1924)	3
Rush Medical College		(1923)	1
University of Illinois	(1923), (1924, 2)		3
University of Kansas		(1923)	1
Harvard University		(1921)	1
St. Louis University	(1923, 3), (1924, 83)		86
Washington University	(1910), (1923, 2), (1924, 49)		52
Creighton Medical College	(1923, 3)		3
University of Nebraska		(1924)	1
University of Oklahoma		(1924)	1
Jefferson Medical College	(1912), (1919),	(1923)	3
Vanderbilt University		(1923)	1
University of Vermont		(1923)	1
University of Heidelberg, Germany		(1918)	1
University of Konigsberg, Germany		(1923)*	1

College	FAILED	Year Grad.	Number Failed
Kansas City College of Med. and Surgery	(1921), (1923, 2)		3
St. Louis Coll. of Phys. and Surgs.	(1920), (1922), (1923, 2)		4
Eclectic Medical College, Cincinnati		(1910)	1
Meharry Medical College	(1909), (1923),	(1924, 2)	4
University of West Tennessee		(1914)	1

* Graduation not verified by A. M. A.

Wisconsin June Examination

Dr. Robert E. Flynn, secretary, Wisconsin Board of Medical Examiners, reports the written and practical examination held at Milwaukee, June 23-26, 1924. The examination covered 18 subjects and included 86 questions. An average of 75 per cent. was required to pass. Of the 86 candidates examined, 77 passed and 9 failed. Thirty-four candidates were licensed by reciprocity. Of the 6 osteopaths examined, 3 passed and 3 failed. Three osteopaths were licensed by reciprocity. Of the 5 chiropodists examined, 3 passed and 2 failed. Of the 4 masseurs examined, 2 passed and 2 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bennett Medical College		(1913)	79
General Medical College	(1924, 14) 76.4, 76.6, 76.9, 79.5, 80.1, 80.3, 80.9, 81.3, 83, 83.4, 84.9, 86, 87.8, 88		
Rush Medical College	(1923) 81.7, (1924, 2) 79.7, 87.1, (1924)*		84.4
University of Illinois		(1924, 4)*	80.8, 85.2, 86.1, 86.7
Indiana University		(1924)	82.9
Boston University		(1924)	87
Harvard University		(1922)	87.7
Tufts College Medical School	(1909) 85, (1920)		88.3
University of Michigan Medical School		(1924)	83
St. Louis University	(1924, 4) 82.7, 85.4, 86.9,		88.2
Columbia University		(1924)	86.6
University of Pennsylvania		(1924)	83.5
Marquette University	(1924, 36)* 78.8, 80.1, 80.4, 81.4, 81.5, 81.8, 81.9, 82, 82.1, 82.4, 82.4, 82.8, 83, 83.1, 83.1, 83.1, 83.7, 84, 84, 84.2, 84.3, 84.4, 84.8, 85, 85, 85.1, 85.1, 85.4, 85.8, 86.1, 86.8, 87.3, 87.7, 88.7, 89.6, 92		
University of Toronto Faculty of Medicine		(1913)	83.3
University of Vienna, Austria	(1921)† 81.4,	(1922)†	81.6
Comenian University, Czechoslovakia		(1920)†	76
University of Heidelberg, Germany		(1914)†	83.2
University of Leipzig, Germany		(1918)†	76.9

College	FAILED	Year Grad.	Per Cent.
General Medical College	(1924) 74.8, (1924)§ 77.3,	(1924)‡	77.7
Washington University	(1922)‡ 82.2,	(1924)‡	84
Marquette University	(1924, 2)* 80.5‡		82.1‡
University of Freiburg, Germany		(1908)†	78.3‡
University of Budapest, Hungary		(1912)	73.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hahnemann Medical College and Hospital, Chicago	(1906), (1922) Illinois	(1906)	Oregon
Loyola University		(1921), (1923)	Illinois
Northwestern University		(1898), (1906)	(1923) Illinois
Rush Med. College	(1913), (1922), (1923, 3) Illinois,	(1924)	Minnesota
University of Illinois		(1918) Illinois, (1922)	Nebraska
State University of Iowa College of Medicine		(1909), (1923)	Iowa
University of Louisville		(1921)	Kentucky
Baltimore Medical College		(1898)	Ohio
Minneapolis College of Physicians and Surgeons		(1908)	N. Dakota
University of Minnesota		(1917), (1922), (1923)	Minnesota
Creighton Medical College		(1923)	Nebraska
Medical College of Ohio		(1909)	Ohio
University of Oklahoma		(1921)	Oklahoma
Jefferson Medical College		(1921)	Penna.
Temple University		(1917)	Penna.
Meharry Medical College	(1917) Kentucky, (1918) (1918) Georgia		Tennessee
University of Tennessee		(1915)	Tennessee
Marquette University		(1917)	Mass.

* These candidates have completed their medical course and will receive their M.D. degrees on completion of a year's internship in a hospital.

†Graduation not verified by A. M. A.

§ Fell below 75 per cent. in practical examination.

‡ Fell below 75 per cent. in anatomy.

‡ Fell below 75 per cent. in medicine and neurology.

Book Notices

HERZKRANKHEITEN UND PSYCHOSEN. Eine klinische Studie. Von E. Leyser. Abhandlungen aus der Neurologie, Psychiatrie, Psychologie und ihren Grenzgebieten. Heft 25. Paper. Price, 4 gold marks. Pp. 83. Berlin: S. Karger, 1924.

This clinical study in the form of a small monograph is largely from the neurologic-psychiatric point of view. Leyser divides his material into pure cardiogenic psychic disturbances; cardiogenic psychoses in arteriosclerotics; cardiogenic psychic disturbances in further complications, and the cause and character of the psychoses during the development of cardiac disturbances. He concludes that the cardiac psychoses such as manic and depressive states, stupor, delirium, hallucinations, confusions and disorientations are due to a postulated unknown poison ("Noxe") elaborated in the course of organic heart disease and in advanced arteriosclerosis. In this connection he discusses at some length the rôle of edema, and decompensation. The frequency of Korsakoff's syndrome is pointed out. Leyser bases his study and conclusions on carefully studied and observed cases in the wards. It is a valuable and critical contribution to a difficult, little understood and less considered field in a borderline psychiatric-medical problem. While his conclusions are largely speculative and theoretical—the subject itself is so new and elusive that more definite interpretation must wait for wider experience, controlled cases, postmortem material in such cases and, hopefully, some experimental studies. A good bibliography is included but, as is so frequent in German monographs, American and English references are noticeably absent. This is the more to be deplored in view of the earliest and perhaps the most fundamentally valuable contribution of Head who, so far as we know, is the outstanding pioneer in this subject. Other recent American contributions by Riesman, Carr, Schwab and Hamburger are not included. The much discussed rôle of digitalis in the origin of the cardiac psychoses is not mentioned at any length.

HUMAN CONSTITUTION. A Consideration of Its Relationship to Disease. By George Draper, M.D., Associate in Medicine at Columbia University. Cloth. Price, $7.50 net. Pp. 345, with 208 illustrations. Philadelphia: W. B. Saunders Company, 1924.

Sir William Osler quoted old Dr. Parry of Bath as saying, "It is much more important to know what sort of a patient has a disease than what sort of a disease the patient has." This might be taken as the text for Dr. Draper's venture into new fields. Up to this time, anthropologists have devoted their attention to racial and sex differences of body measurements, and to the establishment of norms of growth. With the exception of scattered studies listed by the author, and those of Porteus on the cranial measurements of the feebleminded (an exception not noted by Dr. Draper), anthropometric methods have not been applied to the study of disease entities. To be sure, the outstanding picture of the facies or figure in acromegaly, Froehlich's syndrome, exophthalmic goiter and other disease states have long had a recognized diagnostic value. Even in less striking conditions, older clinicians lacking modern laboratory aids are credited with considerable acumen in diagnosis based on keen observation of the patient. However, the accurate recording of physical differences among patients in various disease groups, and the correlation of constitution and the occurrence of a given disease, are a fresh undertaking. The anthropologic methods used for this study are not new, except the use of jaw casts to determine certain measurements not easily taken directly, and changes in procedure necessitated by reason of examining persons confined to bed. The diseases included in this study are: pernicious anemia, pulmonary tuberculosis, gallbladder disease, gastric and duodenal ulcer, asthma due to protein sensitization, and nephritis with hypertension. The number of cases in some of these groups was small, especially as each group is subdivided according to sex. For example, there were only eleven cases of asthma in females and five in males, only thirteen female gastric and duodenal ulcer cases and seventeen males presenting gallbladder disease. From the data obtained by taking about seventy-five measurements for each patient and the recording of other anatomic features based on observation, comparisons of the disease groups are undertaken. Graphic, numerical and analytic methods have been applied by H. L. Dunn. Interesting among these are the construction of an average profile for each group, and the plotting of relative frequency curves for the various disease entities as functions of the physical measurements and computed indexes. The author hopes that these curves may attain diagnostic value, and throw new light on constitutional differences. In several instances the dimensions or indexes of a certain disease state as compared with those of the other pathologic groups have placed the males at one end of the scale and the females at the other. Dr. Draper analyzed such seeming discrepancies, concluding that the sex factor in constitution is of marked significance in relation to disease states. The data suggest to him that disease potentiality may be a secondary sex character since persons suffering with diseases most commonly occurring in the opposite sex (for example, males with gallbladder disease, females with peptic ulcer) show constitutional variations approaching the norms for the opposite sex. This book is only the beginning of Dr. Draper's projected studies. He expects to extend his observations and analyses to a greater number of cases, and to survey the physiologic, immunologic and psychologic factors, correlating them with the anthropometric. The significance of his work can be better told when a more adequate number of cases has been recorded. If this extended trial confirms the present findings, the use of frequency graphs for diagnosis would still depend on an accuracy in the taking of measurements which few attain; but our understanding of constitutional differences will be considerably promoted.

TRAITEMENT CHIRURGICAL DE LA DILATATION BRONCHIQUE. Par P. Guibal. Paper. Price, 10 francs. Pp. 173, with 31 illustrations. Paris: Masson et Cie, 1924.

The author goes directly to the point. He divides the disease into two general divisions: bronchiectasis (1) of the infant and (2) of the adult. The end-result without surgical intervention is fatal, and the prognosis is bad. In infants medical treatment is always resorted to, while in adults the treatment is always surgical. Roentgen-ray examination of the lungs, after introduction of lipiodol, i. e., iodized oil, almost invariably makes the diagnosis clear.

The four varieties of operative procedure in various types of cases are classified as: 1. Compression of lung: (*a*) artificial pneumothorax; (*b*) loosening up of the parietal pleura; (*c*) direct compression of lung; (*d*) thoracoplasty, extrapleural.

2. Drainage of the bronchial cavities (pneumonotomy).

3. Operation causing atrophy of the lung by ligated vessels at the hilum.

4. Resection of the lobe involved (lobectomy). He then describes the various forms, clinical as well as anatomic, in which these surgical procedures are indicated. The surgical technic in all these procedures is given clearly and concisely, and illustrated with drawings. Four of the author's own cases are cited, three ending fatally; the fourth patient, in whom lobectomy was performed, recovered completely.

LES SYNDROMES ANÉMIQUES ET LEUR TRAITEMENT. Par le Dr. R.-J. Weissenbach, Médecin des hôpitaux de Paris. Bibliothèque des grands syndromes. Paper. Price, 25 francs. Pp. 372. Paris: Gaston Doin, 1924.

This is the third of a collection of monographs on the principal disease syndromes. The first section, including sixty-one pages, is a description of the clinical findings and the hematology of the anemias, which are divided into two groups, the grave anemias of the pernicious type and the symptomatic or simple anemias. In discussing the pernicious type, scant attention is given to the neurologic symptoms resulting from combined degeneration of the cord. The only reference to gastric analysis is to the effect that pepsin is diminished or sometimes absent and that hydrochloric acid is also much diminished or absent. The chapter on hematology is superior, but it too could have been improved by including illustrations. The graphic method of recording the size of blood corpuscles introduced by Cecil Price-Jones is not mentioned. The second section covers completely the anemias caused by hemorrhage, infection, parasites, intoxications, cancer, radium, dietary deficiencies and those associated with

endocrine, metabolic, visceral and blood disorders. Forty-five pages are devoted to the anemias of infancy, childhood, adolescence and pregnancy. The most valuable feature of the section on treatment is a discussion of blood transfusions.

Medicolegal

Right of Hospital to Exclude Physicians

(Van Campen v. Olean General Hospital (N. Y.), 205 N. Y. Supp. 554)

The Supreme Court of New York, Appellate Division, Fourth Department, in reversing a judgment rendered in favor of the plaintiff and in dismissing his complaint, says that for a time he was on the visiting staff of the hospital. The differences between him and those in active charge of the hospital involved chiefly complaints made by patients, repeated to the superintendent by the plaintiff, and others of his own, which he said were received with impatience. There were counter complaints that the plaintiff did not comply with the rules and regulations of the hospital. Evidently the directors eventually came to regard the plaintiff as a disturber of the harmony of the institution. Notification of his being dropped from the visiting staff followed. He sought relief from what he contended was an interference with his individual property rights—his right to practice, as a member of the staff in the hospital, for compensation. To state it plainly, his claim was that he had been deprived of the right to use in his business the property of another, this defendant.

The trial court declared that the defendant was a public corporation. This court cannot take that view. Public corporations are the instrumentalities of the state, founded and owned by it in the public interest, supported by public funds, and governed by managers deriving their authority from the state. Hospitals may be established by certain municipalities, and these are public hospitals. Corporations organized by permission of the legislature and supported mainly through voluntary gifts may undertake to perform similar duties, but these are private corporations. That they are engaged in charitable work for the benefit of the public, and are thereby affected with a public interest, does not make them public corporations. The fact that they may receive a donation from the government to enable them to carry on their work, or funds from a city or county to care for sick, indigent persons, does not affect their character as private institutions. While such a corporation is exempt from liability for negligence to patients and from taxation, these facts do not indicate that the corporation is public.

There was no provision in the by-laws of the defendant hospital for a hearing prior to removal or suspension. This court thinks none was required. The selection and retention of physicians to treat patients admitted to the hospital are matters of judgment and discipline. The power to appoint usually implies authority to remove. In common experience, instances are not unusual wherein some physician disagrees with the hospital management. When such disagreement becomes so pronounced as to interfere with orderly management and discipline, and when there is persistent violation and disobedience of necessary rules and regulations, this court thinks that the directors may bring the inharmonious conditions to an end by summary action. They are not required to give notice and conduct a trial in every such case.

The law does not require a corporation like the defendant to furnish its services and accommodations to every one who applies, whether patient or physician. There can be no absolute right in individuals to claim the benefit of its privileges. Such a thing would be impossible. There must be discretion vested in the management to make selection from applicants with regard to accommodations available. It may reject one who has some trivial ailment, and accept another whose needs are greater. This is not illegal discrimination, depriving a person of his rights; nor does this court deem it such discrimination, if from a large number of physicians it selects members of its visiting staff with regard, not only to their medical skill, but to their adaptability to the rules and discipline of the institution. Even in public hospitals the same rule in the selection of patients and physicians must apply, for the only inhibition by statute against discrimination which this court has discovered is that relative to students in incorporated medical colleges (Section 333 of the New York Public Health Law). The usual remedy for persons dissatisfied with the internal management of corporate affairs is to elect a new board of directors.

Plaintiff's Election Between Truss and Herniotomy

(Powelson v. Chicago, M. & St. P. Ry. Co. (Mo.), 263 S. W. R. 149)

The Supreme Court of Missouri, Division 1, says that the plaintiff brought this action to recover damages for an inguinal hernia which he alleged that he had sustained while working on the defendant's railroad track. The defendant contended that the plaintiff had refused to submit to medical and surgical treatment, whereas, had he submitted to it, he could have been easily cured. The railway company's physician testified that the plaintiff came to him for treatment, and that he told the plaintiff that he could wear a truss or be operated on, and advised him strongly to wear a truss until he was operated on; to wear a truss, anyhow, and be operated on if he so decided; that either one would be good; that many men wear trusses all their lives, and that he could wear one if he did not want an operation. The physician further testified that, while the risk of an operation is slight, as a matter of fact, it is so great to the lay mind that four fifths of sufferers from hernia never have an operation, but wear trusses. A physician, who was a witness for the defendant, testified that the operation for hernia was simple, safe, and 100 per cent. successful; but, on cross-examination, he admitted that he himself had been afflicted with hernia for five years and had never had an operation, but wore a truss, although he could have had the services of surgeons free of charge. The only evidence that the plaintiff was positively invited by the defendant to be operated on for hernia, and refused, was that of the defendant's claim agent, who was not a physician. The plaintiff testified that he was 48 years old when injured. The only work that he could do was manual labor, and his earning power was substantially reduced—about one half, according to his evidence. He recovered a judgment for $12,500, but the supreme court thinks that was excessive, and conditioned affirmance on $2,500 being remitted. It is true, the court says, that it has been held that the injured party cannot arbitrarily refuse to submit to proper medical and surgical treatment, and thus increase his injury, and recover therefor; but even in such case it only goes to the amount of his damages, and does not bar his cause of action. But in this case the court cannot say that it was unreasonable or arbitrary in the plaintiff "to bear the ills" of a truss rather than "fly to others that he knew not of," by having an operation, the same as the evidence showed the majority of people so afflicted do, including the distinguished surgeon who testified for the defendant, and who, it seemed, "refused to take his own medicine." Moreover, in the judgment of this court there was abundant evidence that if the physician who advised the plaintiff had been more insistent, and explained the character and probable result of the operation more fully to the plaintiff, who knew nothing of the best treatment for himself, who, indeed, seemed to have been an ignorant person, unable to read and write, he would have submitted to the operation, and that in simply wearing a truss, as he did do, he substantially followed the advice of his physician, and he ought not to be charged with any fault in so doing. At least, that was for the jury.

Society Proceedings

COMING MEETINGS

American Association for the Study of Goiter, Bloomington, Ill., Jan. 28-30. Dr. J. D. Moschelle, Odd Fellows Bldg., Indianapolis, Secretary.

Middle Section of American Laryngological, Rhinological and Otological Society, Lafayette, Ind., Feb. 23. Dr. George F. Keiper, 14 North 6th Street, Lafayette, Ind., Chairman.

Southern Section of American Laryngological, Rhinological and Otological Society, Jacksonville, Fla., Jan. 19. Dr. H. Marshall Taylor, 111 West Adams St., Jacksonville, Chairman.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

4: 605-741 (Nov.) 1924

Tuberculosis and Fertility. M. Kacprzak, Baltimore.—p. 605.

Reaction of Pathogenic Fungi to Ultraviolet Light and Rôle Played by Pigment in This Reaction. A. P. Chavarria and J. H. Clark, Baltimore.—p. 639.

Threshold Air Currents in Ventilation. A. M. Baetjer, Baltimore.—p. 650.

Occurrence of Cell-Inclusions in Rabbit Cornea After Inoculation with Vesicular Contents and Nasopharyngeal Secretion of Varicella Cases. C. E. Simon and J. M. Scott, Baltimore.—p. 675.

Seasonal Prevalence of Infantile Paralysis. Seasonal Variation in Case Fatality Rate. W. L. Aycock and P. Eaton, Baltimore.—p. 681.

*Effect of Carbon Tetrachlorid on Egg Laying Powers of Female Hookworm. W. C. Sweet, Baltimore.—p. 691.

*Treatment of Hookworm Disease with Combination of Carbon Tetrachlorid and Oil of Chenopodium. F. L. Soper, Baltimore.—p. 699.

Larval Pilotaxy of Anopheles Quadrimaculatus and Anopheles Punctipennis. F. M. Root, Baltimore.—p. 710.

*Experimental Measles. II. Occurrence of Protective Bodies in Blood of Rabbits, Following Inoculation with Blood or Nasopharyngeal Secretion from Cases of Human Measles. J. M. Scott and C. E. Simon, Baltimore.—p. 725.

Effect of Carbon Tetrachlorid on Hookworm.—Investigations made by Sweet showed that in most instances carbon tetrachlorid, in doses up to 2 c.c., had very little inhibiting action on the egg laying power of the female ancylostome. All inhibition had disappeared by the seventh day. Reexaminations in either field or laboratory work could be made one week after treatment. In this series of egg counts the number of eggs per gram of feces from the same persons was found to vary with the character of the stool. The ratio established was very close to that found by Stoll working on necators in Porto Rico. The theoretical number of worms responsible for the eggs counted was found to be high and, on theoretic grounds, it was predicted that female ancylostomes would be found to have about five times the egg laying powers of female necators.

Carbon Tetrachlorid and Oil of Chenopodium in Hookworm Infestation.—Hookworm infestation in Paraguay is very heavy. Fortunately, the infestation is over 90 per cent. of the less resistant and probably less harmful necator. According to Soper, the combination of carbon tetrachlorid, 3 parts, with oil of chenopodium, 1 part, in adult dose of 2.4 c.c. (1.8 c.c. of the former and 0.6 c.c. of the latter) is very effective in an area of low ancylostome infestation. No toxic symptoms were reported. Like other anthelmintics, this combination gives a higher percentage of total worms removed in heavily infested cases than in those with few worms. This is probably due to a larger percentage of immature forms in heavily infested cases. The simultaneous administration of magnesium sulphate tends to delay the expulsion of many worms until the second day. There appears to be, however, no diminution nor delay of anthelmintic action. A simultaneous reduction of toxicity and cost per person treated may be expected from the introduction of this method of administration in field work against hookworm disease.

Experimental Measles; Protective Substances in Blood.—In the blood of rabbits which have given a thermic and leukocytic response to inoculation with infective material derived from human measles, Scott and Simon noted the occurrence of a substance or substances which on injection into previously uninoculated rabbits will prevent a similar reaction, when these are then inoculated with infective material of the same order. They interpret this as indicating the presence of protective substances in the blood of the previously infected animals; such animals are themselves resistant to reinoculation with infective material. The protective action was demonstrable if the test inoculation immediately preceded or followed the other. For purposes of demonstrating the occurrence or nonoccurrence of a response to test inoculations of this order, total and absolute differential leukocyte counts may be dispensed with; thermometric observations alone suffice.

American Journal of Ophthalmology, Chicago

7: 829-908 (Nov.) 1924

Ocular Changes in Kala-Azar in Peking. W. P. Ling, Peking.—p. 829.

Ocular Findings in Kala-Azar in Central China. T. P. Lee, Peking.—p. 835.

Importance of Testing Ocular Muscles in Diagnostic Directions. F. H. Lee, Richmond, Va.—p. 838.

Effect of Brightness of Preexposure and Surrounding Field on Breadth and Shape of Color Fields for Stimuli of Different Sizes. C. E. Ferree and G. Rand, Bryn Mawr, Pa.—p. 843.

Use of Epinephrin in Increased Intraocular Tension. H. S. Gradle, Chicago.—p. 851.

Standardized Test Object for Visual Field Studies in Electric Illumination. J. N. Evans, Brooklyn.—p. 854.

Pupillary Studies in General Paralysis. W. D. Rowland and J. J. Skirball, Boston.—p. 856.

Glaucoma and Endocrines. P. Fridenberg, New York City.—p. 860.

American Journal of Physiology, Baltimore

70: 225-452 (Oct. 1) 1924

Relation of External to Internal Secretion of Pancreas. I. Biochemical Study on Nature of Action of Trypsin on Insulin. A. A. Epstein and N. Rosenthal, New York City.—p. 225.

*Some Chemical Changes of Blood Produced by Drugs. III. Phlorhizin. H. N. Ets, Chicago.—p. 240.

Gastric Secretion. II. In Sleep. R. L. Johnston and H. Waheim, Augusta, Ga.—p. 247.

Relation of Blood Volume to Tissue Nutrition. VI. Automatic and Bloodless Method of Recording Volume Flow of Blood. R. Gesell, San Francisco.—p. 254.

Thyroid Apparatus. XXVIII. Influence of Thyroparathyroidectomy and Parathyroidectomy on Development of Albino Rat. F. S. Hammett, Philadelphia.—p. 259.

*Production of Anhydremia with Insulin. D. L. Drabkin and D. J. Edwards, New York City.—p. 273.

Oxygen Consumption in Men During Short Exposures to Low Barometric Pressures. E. C. Schneider, D. Truesdell and R. W. Clarke, New York.—p. 283.

Relative Physiologic Value of Spectral Lights. V. Alleged Influence of Light on Respiration in Frog. E. E. Crofts and H. Laurens, New Haven, Conn.—p. 300.

Effects of Mechanical and Chemical Stimulation of Tracheobronchial Mucous Membrane. O. Larsell and G. E. Burget, Portland, Ore.—p. 311.

Synthesis of Vitamin C by Germination. E. M. Honeywell and H. Steenbock, Madison, Wis.—p. 322.

Relationship of Phosphate and Carbohydrate Metabolism. II. Effect of Epinephrin and Phlorhizin on Excretion of Phosphate. F. N. Allen, B. R. Dickson and J. Markowitz, Toronto.—p. 333.

Studies on Vigor. I. Effect of Suprarenal Extirpation on Activity of Rat. E. P. Durrant, Columbus, Ohio.—p. 344.

*Absorption of Insulin from Alimentary Canal. L. C. Maxwell, N. R. Blatherwick and W. D. Sansum, Santa Barbara, Calif.—p. 351.

Nervous Regulation of Progression in Mammals. N. B. Laughton, London, Canada.—p. 358.

*Effect of Changes in Pulse Rate on Diastolic Heart Size. W. J. Meek, Madison, Wis.—p. 385.

Increased Blood Urea Concentration of Extrarenal Origin. L. L. MacKay and E. M. MacKay, San Francisco.—p. 394.

Effects of Baths on Man. I. Relationship Between Effects Produced and Temperature of Bath. H. C. Bazett, Philadelphia.—p. 412.

Blood Changes Produced by Phlorhizin.—According to Ets phlorhizin produces the following changes in the blood: a hypoglycemia, an increase in the total lipoids and cholesterol, an acidosis as indicated by the fall in alkali reserve and the hydrogen ion concentration, and an increase in the nonprotein nitrogen.

Production of Anhydremia with Insulin.—In experimental insulin hypoglycemia it is shown by Drabkin and Edwards that associated with the decline in blood sugar there is an increase in the percentage of hemoglobin in the blood. The concentration of the blood due to a loss of fluid is evident from an increase in hemoglobin percentage, an increase in the blood cell count, a decrease in the percentage of plasma, a reduction in the plasma volume and from certain physical changes in the blood associated with dehydration.

Absorption of Insulin from Alimentary Canal.—Further experiments are reported by Maxwell, Blatherwick and Sansum which show that there is no significant effect on blood sugar when regular insulin in alcohol is given by stomach tube to rabbits. A small fraction of pancreatic extracts produces typical insulin hypoglycemia and convulsions when given per os in water solution. The material is soluble in

acid alcohol of at least 96 per cent. concentration and is precipitated from this liquid at a slightly alkaline reaction.

Effect of Pulse Rate Change on Diastolic Heart Size.—It is evident from the figures obtained by Meek that the heart rate must be carefully considered in any studies made on the heart by the roentgen ray. The data presented confirm Henderson's conception that the diastolic filling of the heart under normal conditions consists of two stages, one of rapid in flow and the other of diastasis. In dogs under ether anesthesia with the thorax intact, the diastolic size of the heart as shown by the roentgen ray slowly decreases as the heart rate increases from 0 to about 110 beats per minute. As the rate increases beyond an average of 110, the diastolic size undergoes a very rapid decrease.

American Journal of Psychiatry, Baltimore

4: 161-406 (Oct.) 1924

*Kottmann Reaction as Applied to Psychiatric Cases. T. Raphael and G. J. Smith, Ann Arbor, Mich.—p. 161.
*Malarial Treatment of Paretic Neurosyphilis. N. C. Lewis, L. D. Hubbard and E. G. Dyar, Washington, D. C.—p. 175.
Significance of Certain Nerve Cell Changes, Probably Toxic, in Relation to Clinical Diagnosis. O. F. Kelly, Hathorne, Mass.—p. 227.
Pellagra: Cases. L. B. Pierce, Westborough, Mass.—p. 237.
Constitution and Disposition in Psychiatric Relations. A. M. Barrett, Ann Arbor, Mich.—p. 245.
What is Mental Hygiene? E. S. Abbot.—p. 261.
Methods Employed in Control of State Hospitals for Mental Patients. H. W. Mitchell, Warren, Pa.—p. 285.
Administrative Problems of Boston Psychopathic Hospital. W. F. Wood. —p. 297.
How to Secure Public Support of State Hospital. C. E. Thompson. Gardner, Mass.—p. 309.
Functional Planning of Hospitals for Mental Disease. S. W. Jones and H. Scott.—p. 317.

Kottmann Reaction in Psychiatric Cases.—On the basis of the application of the Kottmann reaction so-called to a large series of psychiatric cases, it appears to Raphael and Smith that evidence, and of an essentially direct type, has been adduced as to the fundamental significance of the psychologic substrate and specifically, at least by inference, through this work, of the thyroid unit of the endocrine chain as regards the mediation of affective and feeling reaction on the psychic level and, by corollary, emphasizing importance of the psychogenic factor in cases showing actual clinical or medical endocrinopathy.

Malarial Treatment of Paretic Neurosyphilis.—This report by Lewis, Hubbard and Dyar is based on a study of 1,558 cases which had been diagnosed general paresis. Sixty-eight paretic patients were selected for malarial treatment. These patients were inoculated with tertian malaria according to the Wagner-Jauregg technic, allowed to have from twelve to sixteen paroxysms and were then treated with quinin. Nineteen patients were not notably changed, twelve went on to extreme deterioration, thirteen died, and eight were early transferred from the hospital, after which no trace could be found. Classed among those who did not respond to treatment are nine who failed to become infected with malaria after repeated attempts at inoculation. Thus sixteen, or 31 per cent., remissions occurred among fifty-one patients who responded to the inoculations and can be accounted for. This result would seem to justify extensive experimentation with the method. Four cases came to necropsy. The authors summarize the pathologic changes found.

Annals of Clinical Medicine, Baltimore

3: 371-412 (Nov.) 1924

Acidity Curves in Gastric, Duodenal and Mixed Ulcers. E. L. Heintz and W. H. Welker, Chicago.—p. 371.
*Hypoglycemic Reaction or Insulin Shock. O. H. Petty and K. Knode, Philadelphia.—p. 380.
*Extrasystoles. A. L. Smith, Lincoln, Neb.—p. 385.
Focal Infection: Teeth, Tonsils and Gastro-Intestinal Tract. G. B. Eusterman, Rochester, Minn.—p. 394.
Intravenous Tartar Emetic in Various Conditions. W. A. Whitman, Columbus, Ohio.—p. 402.

Hypoglycemic Reaction or Insulin Shock.—Petty and Knode analyze the records of thirty-one reactions during insulin administration distributed among sixteen different patients, the greatest number of collapses experienced by one patient being six. Only carbohydrates, and in a few instances a cup of hot black coffee, were used in the treatment of these cases. The carbohydrates were administered in the form of orange juice, except in three cases when cane sugar dissolved in a small quantity of water was given. The glucose that was given intravenously was in the form of a 20 per cent. aqueous solution. Twelve patients received no carbohydrate. Their symptoms were of such a mild nature that no treatment other than a cup of hot coffee or absolute rest in bed was necessary to relieve their symptoms. Seventeen patients received carbohydrate by mouth. The largest amount given was 60 gm., the smallest was 5 gm., the average given was 14 gm. Two received carbohydrate both intravenously and by mouth. They averaged 27 gm. of glucose intravenously and 20 gm. by mouth. Every patient to whom carbohydrate was administered obtained complete relief in from five to ten minutes. Those that received no medication except a cup of coffee and rest were a little slower in recovering but recovered none the less completely.

Extrasystoles.—Smith reviews the cases of 100 patients with extrasystoles who were seen in office practice. The youngest patient was a boy of 11; the oldest was a man of 66. The period in which this arrhythmia was known to be present varied from a few days to twenty-five years. The symptoms complained of varied from those of heart failure in nine cases of endocardial, myocardial and aortic disease, to none in thirty-five cases. The principal symptoms complained of were shortness of breath (synchronous with the extrasystole), grabbing, tearing, grasping, palpitation, turning of the heart, lump, jerking, emptiness, shaking and fullness. Coffee, tea, cocoa and tobacco seemed to have been the etiologic factor in twenty-one cases; drugs in six cases. Seven pregnant women developed extrasystoles which disappeared after confinement. Alcohol accounted for three. Cardiac pathology was the causative agent in nine cases, while infections and toxemias outside the heart seemed to be responsible for thirty-one cases. There were fourteen patients in whom a diligent search failed to reveal any pathology or any other cause. The extrasystole arose in the auricle in five cases and in the bundle in eight, while in the other eighty-seven patients the ventricle was the seat of the premature contraction. The heart was normal in size in ninety-one cases, while in the other nine cases it was definitely enlarged. The aorta was dilated in two cases of the latter group. The nine patients with enlarged hearts had unmistakable heart disease. The treatment consisted of: (1) the removal of any exciting factor in the environment; (2) the withdrawal of all stimulants; (3) the attempted removal or correction of any pathologic condition; (4) the attempted correction of abnormal functional conditions; (5) proper diet, regular eating and sleeping hours; (6) the administration of sedative drugs. Of the ninety-six patients who are living, fifty-six have hearts that have been restored to normal rhythm, but of this number seven develop an extrasystole whenever coffee or tobacco is taken into the system. The other forty have not been restored to permanent regular rhythm although several of them have remained normal over long periods of time. None of the ninety-one patients has any signs of heart failure and each performs his daily duties without any cardiac embarrassment. Smith does not believe that the myocardium is impaired in any manner by the extrasystole, and that this condition, if looked for diligently, can be found in the majority of people.

Archives of Neurology and Psychiatry, Chicago

12: 601-738 (Dec.) 1924

*Lesion of Left Lenticular Nucleus and Adjacent Structures. F. X. Dercum, Philadelphia.—p. 601.
Mucin-Like Bodies in Central Nervous System in Epidemic Encephalitis. J. J. Lhermitte, Paris, W. M. Kraus, New York and F. Bertillon, Paris.—p. 620.
*Fracture-Dislocation of Neck. A. S. Taylor, New York.—p. 625.
*Histopathology of Amaurotic Family Idiocy (Infantile Type of Tay-Sachs). G. B. Hassin, Chicago.—p. 640.
Extradural Spinal Tumors. B. Stookey, New York.—p. 663.
Sensory Disturbances in Multiple Sclerosis. M. Keschner and W. Malamud, New York.—p. 682.
*Ventricular Hemorrhage with Recovery: Case. B. J. Alpers, Philadelphia.—p. 695.

Complete Aphasia with Lesion in Left Lenticular Nucleus.—The interest in Dercum's case centers in the aphasia. At no time that the patient was under observation could he

comprehend anything that was said to him, and the result was the same when written or printed matter was held before his eyes. He evidently attempted to reply when forcibly spoken to, but the only answers received, which he tried to make, were "yes" or "no," and even these words were uttered imperfectly and were clearly not responsive to the questions asked. Necropsy revealed a hemorrhage in the left hemisphere which had involved extensively the lenticular nucleus, the internal capsule and the white substance subadjacent to the convolutions of the island of Reil. The lesions extended sufficiently far posteriorly to invade the anterior portion of the temporoparietal isthmus. There was considerable loss of substance. The third frontal convolution, together with its subjacent white matter, was entirely free from involvement.

Fracture-Dislocation of Neck.—The principle of Taylor's method consists in controlled traction exerted on the head (with counter traction on the lower extremities) until the spasmodically contracted cervical muscles have relaxed sufficiently to permit reduction by bimanual manipulation on the part of the operator. Fixation is maintained by a plaster jacket involving the trunk and neck, the neck portion maintaining extension of the neck by pressure upward against the occiput and inferior maxilla, and downward against the shoulders. The patient must wear a support continuously, day and night, until solid bone union has occurred between the damaged vertebrae. Physiotherapy and muscle training must be used to obtain the best results.

Histopathology of Amaurotic Family Idiocy.—Hassin believes that his case, type Tay-Sachs, seems to justify an opinion that amaurotic family idiocy is essentially a developmental anomaly in that the ganglion cells are defective in their growth and insufficiently supplied with the stainable (chromatophilic or Nissi) substance. In addition, they show more or less marked degenerative phenomena, both the development and the degenerative conditions being especially in evidence in the optic thalamus.

Ventricular Hemorrhage with Recovery.—The diagnoses considered on entrance in Alpers' case were cerebral hemorrhage, brain tumor with hemorrhage, epidemic encephalitis and central nervous system syphilis. The widespread signs found in this case could be produced only by an extensive and therefore fatal hemorrhage. The absence of the ordinary premonitory signs of increased intracranial pressure and the absence of choked disks seemed to rule out a brain tumor. Epidemic encephalitis was ruled out by the absence of any definite history or signs which might prove the existence of this infection, and by the complete recovery of the patient. Neurosyphilis was excluded by the negative serology. The diagnosis of ventricular hemorrhage seemed justified on the basis of the widespread neurologic signs, the repeatedly bloody spinal fluids, and the rapid recovery which would seem to point to a hemorrhage into an area where absorption could readily take place. The basis for the hemorrhage was presence of cardiorenal disease with an increased blood pressure. Frequent drainage of the spinal fluid by cistern and lumbar punctures was effective in producing beneficial results. The use of hypertonic saline solution also was of great value in decreasing the spinal fluid pressure, and thus decreasing the intracranial pressure.

Archives of Occupational Therapy, Baltimore

3: 339-422 (Oct.) 1924

Occupational Therapy: In Italy. V. M. Palmieri, Naples.—p. 339.
Id. At St. Elizabeth's Hospital. W. M. Kenna, Washington, D. C.—p. 355.
Id. In Sanatorium Treatment of Tuberculous. G. L. Bellis, Wauwatosa, Wis.—p. 363.
Id. For Nurses. W. G. Ryon, Poughkeepsie, N. Y.—p. 367.
Nationwide Organization for Service to Disabled. R. C. Branion.—p. 371.

Archives of Ophthalmology, New Rochelle, N. Y.

53: 517-630 (Nov.) 1924

Mycosis of Choroid Following Cataract Extraction, and Metastatic Choroiditis of the Other Eye, Producing Clinical Picture of Sympathetic Uveitis. F. H. Verhoeff, Boston.—p. 517.
Syphiloma and Syphilitic Iridocyclitis. T. M. Li, Peking.—p. 531.
Lindner Strabismus Operation with Technic and Original, Additional Cases Reported. E. B. Spaeth, Washington, D. C.—p. 540.
Syphilitic Iridocylitis with Consideration of Factors Influencing Its Occurrence. E. I. Zimmermann, Baltimore.—p. 549.
Michel Metal Suture in Spastic Entropion. R. I. Lloyd, Brooklyn.—p. 566.
Blocking of Fifth and Seventh Nerves as an Accessory in Cataract Operations. J. M. Robinson, Houston, Texas.—p. 570.
General Anesthesia in Ophthalmic Practice. J. T. Gwathmey, New York.—p. 579.

Arkansas Medical Society Journal, Little Rock

21: 111-131 (Nov.) 1924

Rational Classification of Heart Rhythms. W. D. Rose, Little Rock.—p. 111.
Significance of Vertigo. E. T. Ponder, Little Rock.—p. 114.
Ureter Obstruction. W. R. Brooksher, Fort Smith.—p. 116.
Plea for Greater Research. A. L. Best, Newport.—p. 118.

Boston Medical and Surgical Journal

191: 1101-1146 (Dec. 11) 1924

Nonperforating Ulcers of Stomach and Duodenum. J. E. Briggs, Boston.—p. 1101.
*Intussusception in Adults. R. P. Sullivan, New York City.—p. 1105.
Analysis of 1,000 Consecutive Obstetric Cases. C. J. Kickman, Boston.—p. 1110.
Shoulder Pain as an Indication of Ruptured Ectopic Pregnancy. A. Corvese, Providence, R. I.—p. 1112.
Convalescence VII: Houses of Rest in Russia. J. Bryant, Boston.—p. 1114.
Avoidance of Intravenous Glucose Reactions. J. L. Stoddard, Boston.—p. 1121.
Cure of Antral Fistula. D. W. Drury, Boston.—p. 1123.

Unusual Case of Intussusception.—Sullivan's patient had been ill six days before he was operated on. Then there was found an intussusception of the jejunum into the upper ileum, measuring about 16 inches long, and 7 or 8 inches in circumference. The intestine above and below the mass was markedly edematous and hypertrophied. At the root of the mesentery of the mass a definite venous thrombus was demonstrated, yet the color of the intussuscipiens was good. Reduction was found impracticable, hence a complete resection was done, followed by a suture end-to-end anastomosis. A noteworthy fact was the entire absence of free fluid in the abdominal cavity, yet the obstruction was almost complete. On longitudinal section three free intestinal layers without adhesions were found. The intussuscipiens presented two small ulcers measuring about 8 mm. in diameter. The intusscusceptum was decidedly hemorrhagic, edematous and undergoing necrosis. The neck of the intussusception was markedly contracted.

191: 1147-1194 (Dec. 18) 1924

Treatment of Complications Arising After Operations on Thyroid. H. M. Clute, Boston.—p. 1147.
Relation of Mouth Infection to Thyroid. O. T. Osborne, New Haven, Conn.—p. 1151.
*Action of Tartar Emetic on Heart. W. D. Reid, Boston.—p. 1153.
Implantation Tumors of Endometrial Type. C. R. Abbott, Clinton.—p. 1159.
Benzol Poisoning in Rubber Industry. H. J. Cronin, Cambridge.—p. 1164.
Technic of Cleft Palate Operations. B. B. Cates, Knoxville, Tenn.—p. 1166.

Action of Tartar Emetic on Heart.—The action of tartar emetic has been studied by Reid electrocardiographically in a small group of clinically normal hearts, and in others affected by auricular fibrillation and ventricular extrasystoles, respectively. The most noteworthy effects are: reduction in the heart rate, prolongation of the P-R interval, increase in the height of the T wave, and slowing of the rate of the circulating wave in auricular fibrillation. It is believed that the effect is only in part due to stimulation of the vagus nerve. Neither of the arrhythmias, auricular fibrillation and ventricular extrasystoles, were abolished. Although nothing was achieved of value to the patients tested it is felt that there is yet prospect that further investigation may suggest some practical use for tartar emetic in cardiac therapy.

191: 1195-1244 (Dec. 25) 1924

Teaching the Practice of Medicine. E. H. Bradford.—p. 1195.
Surgical Treatment of Extrophy of Bladder: Case. L. Davis.—p. 1201.
*Empyema. Treated by Closed Method. H. Binney, Boston.—p. 1206.
Toad in Hole Circumcision. D. H. Stewart.—p. 1216.

Treatment of Empyema by Closed Method.—In 100 cases of acute empyema in infants, children and adults, reviewed by Binney, the mortality following drainage by a closed method was 13 per cent. The mortality in cases operated on in the first and second weeks following the development of

the effusion was 25 per cent.; in cases operated on during the third week or later, it was 11.3 per cent. Twenty-one cases required secondary operations. Sixty-eight patients were discharged healed; nineteen others had a discharging sinus or a small granulating wound. Surgical solution of chlorinated soda as a disinfectant and for irrigation was used in all cases, except when a bronchial fistula was present. Four cases became chronic, including one case probably tuberculous.

Iowa State Medical Society Journal, Des Moines

14: 440-484 (Oct. 10) 1924

Conserving Mental Health. J. F. Hill, Des Moines.—p. 439.
Why Save First Teeth and How. A. C. Hunter, Des Moines.—p. 443.
Sheppard-Towner Work in Iowa. J. W. Rust, Iowa City.—p. 446.
Problems of Rural Practitioner. Z. E. Morris, Stockport.—p. 449.
Factors of Safety in Prostatic Surgery. V. C. Hunt, Rochester, Minn. —p. 450.
Preparation of Prostatics for Operation. D. N. Eisendrath, Chicago. —p. 453.
Tumors of Breast. J. F. Erdmann, New York City.—p. 458.
Treatment of Compound Fractures of Long Bones. C. L. Starr, Toronto, Canada.—p. 462.
What to Expect and What Not to Expect from Wassermann Reaction. D. M. Griswold, Iowa City.—p. 466.
Pioneer Physicians. D. S. Fairchild, Clinton.—p. 469.

Journal of Comparative Psychology, Baltimore

4: 349-445 (Aug.) 1924

Studies in Reeducation: Aphasias. S. I. Franz, Los Angeles.—p. 349.
Reliability of Maze with Rats and Humans. W. S. Hunter and V. Randolph, Lawrence, Kan.—p. 431.

Journal of General Physiology, Baltimore

7: 177-326 (Nov.) 1924

Temperature and Forward Movement of Paramecium. O. Glaser, Amherst, Mass.—p. 177.
Biologic Oxidations as Function of Temperature. W. J. Crozier, New Brunswick, N. J.—p. 189.
Phototropic Mechanism in Ranatra. W. J. Crozier and H. Federighi, New Brunswick, N. J.—p. 217.
Effect of Valency of Cations and Anions on Negatively and Positively Charged Red Blood Cells. J. Oliver and L. Barnard, San Francisco. —p. 225.
Visual Discrimination of Intensity and Weber-Fechner Law. S. Hecht, Boston.—p. 235.
*Kinetics of Starvation. N. C. Wetzel, Cleveland.—p. 269.
Formation and Ionzation of Compounds of Casein with Alkali. I. Transport Numbers of Alkali Caseinate Solutions. D. M. Greenberg and C. L. A. Schmidt, Berkeley, Calif.—p. 287.
Id. II. Conductivities of Alkali Caseinate Solutions. D. M. Greenberg and C. L. A. Schmidt, Berkeley, Calif.—p. 303.

Kinetics of Starvation.—Attention is called by Wetzel to the fact that the time of onset of beriberi in pigeons is coincident with the half period of starvation.

Journal of Laboratory and Clinical Medicine, St. Louis

10: 87-172 (Nov.) 1924

Adequate Laboratory Service in Modern Hospital. W. Burdick, Denver. —p. 87.
Influence of Natural Antisheep Hemolysin of Human Serums on Production of Anomalous Reactions in First Tube of Kolmer's Quantitative Complement-Fixation Test for Syphilis. R. A. Kilduffe, Los Angeles.—p. 93.
Measurements of Uric Acid in Blood by Various Methods. W. G. Lennox and M. F. O'Connor, Boston.—p. 99.
*Organic, Protein and Colloidal Silver Compounds. IV. Deterioration of Solutions on Keeping. T. Sollmann and J. D. Pilcher, Cleveland. —p. 103.
*Blood Cell Morphology and Function. II. Morphologic Changes of Blood in Myelogenous Leukemia Under Radium Treatment. M. M. Strumia, Philadelphia.—p. 106.
*Id. III. Extreme Neutrophilic Leukocytosis; Simplified Arneth Count. C. Pons and E. B. Krumbhaar, Philadelphia.—p. 123.
*Use of Desiccated Red Bone Marrow and Spleen in Treatment of Anemia. W. Thalhimer, Milwaukee.—p. 129.
Removal of Phenoltetrachlorphthalein from Circulation. R. Ottenberg, S. Rosen and L. Goldsmith, New York City.—p. 138.
Lesions in Guinea-Pigs Produced by Inoculation of Very Old Culture of Tubercle Bacillus. R. C. Rosenberger, Philadelphia.—p. 140.
Modification of Bloor Method for Blood Phosphates. K. L. McCluskey, Chicago.—p. 143.
Simple Device for Relocating Microcolonies. F. T. Breidigam and T. M. Chang, Battle Creek, Mich.—p. 149.
Effect of Heat on Staining Properties of Tubercle Bacillus. T. G. Hull, K. Henkes and L. Fry, Springfield, Ill.—p. 150.
Simple and Rapid Method for Preparation of Polychrome Methylene Blue and Thiazin Red. Rapid Method for Staining Frozen Sections with Thiazin Red. F. Proescher and A. P. Krueger, San Jose, Calif.—p. 153.
Tetanus Toxin Filtering Apparatus. E. Redowitz, Glenolden, Pa.—p. 160.

Lessening Antiseptic Efficiency of Colloidal Silver Compounds.—Sollmann and Pilcher have found that solutions of the colloidal silver compounds show progressive changes of antiseptic efficiency on keeping. Protargol solutions (and presumably others of the same type) become poorer in ionic silver, and therefore less efficient; but even in a year the change would not be of much clinical importance. Argyrol and silvol (and presumably others of the type), become richer in silver ions, and therefore more antiseptic, but also more irritant. The changes start rapidly, so that a week might suffice to modify the clinical response.

Effect of Radium on Blood.—The effect on the morphology of the blood of radium emanations applied upon the long bones in two cases of chronic myelogenous leukemia has been studied by Strumia. Radium acted first in these cases, especially if applied in small doses, as a stimulant, on both leukocytes and erythrocytes. Following the period of stimulation, radium manifested its destructive action especially on the leukocytes, the order of their disappearing being in direct proportion to their immaturity. Platelets were also greatly reduced by radium, and the coagulation time was proportionally lengthened. There was a "free interval" following the radium treatment during which the morphology of the blood remained near normal, and the clinical symptoms of the disease were quiescent. In their reappearance in the blood stream, the immature cells followed exactly the opposite order of their disappearance, the most immature forms being the last to reappear. Evidence has not been found of circulating lymphocytes being more affected by radium than the granulocytes. In fact, like the majority of investigators, we have found that, while extensive radiation reduces the absolute number of both types of cells, the relative percentage of lymphocytes is usually increased.

Simplified Arneth Count.—Vitally stained living blood films offer an interesting means of corroborating Arneth counts made on stained fixed smears. As the normal life of a leukocyte in the circulation is thought to be only a matter of two or three days, the constant shape of the neutrophil nucleus in the living state for several hours is further support of the view that this shape is not an accident, but bears a definite relation to the life history of the cell. Segmentation of the unsegmented neutrophil nucleus was not observed by Pons and Krumbhaar over a period of several hours in preparations of living leukocytes vitally stained. Segmented neutrophil nuclei were not seen to become horseshoe nuclei, although the segments may become temporarily indistinguishable during motion. The relative percentage of segmented and unsegmented nuclei of neutrophils is approximately the same in living as in fixed preparations. These findings support Arneth's view of the significant relation between the shape of the nucleus and the age of the cell.

Bone Marrow and Spleen in Treatment of Anemia.—The administration of desiccated spleen and red bone marrow, combined in equal proportions, in three 5 grain capsules daily, to a group of forty-six patients with secondary anemia was followed by a definite increase in hemoglobin and circulating erythrocytes in 89 per cent. of these patients. This preparation caused a fall in hemoglobin and circulating erythrocytes in four patients with pernicious anemia, and Thalhimer says should not, therefore, be used in this condition.

Journal of Urology, Baltimore

12: 445-583 (Nov.) 1924

*Experimental Studies on Vas Deferens. H. C. Rolnick, Chicago.—p. 445.
*Tuberculosis of Seminal Tract. J. R. Dillon, Stanford University, Calif.—p. 479.
Physiotherapy in Renal Tuberculosis. W. F. Martin, Battle Creek, Mich. —p. 493.
Tuberculosis of Genito-Urinary Tract Confined to Prostate. W. W. Scott, Baltimore.—p. 515.
Local Anesthesia for Urethra. B. Lewis, St. Louis.—p. 527.
*Intradural Anesthesia in Genito-Urinary Surgery. W. C. Stirling, Washington, D. C.—p. 535.
*Regional Anesthesia for Major Urologic Operations. O. W. Lowsley and H. E. Rogers, New York.—p. 543.
New Pyelographic Medium (Neosilvol). A. Ravich, Brooklyn.—p. 573.
New Irrigating Cystoscope for Operations Within Urinary Bladder. O. W. Lowsley, New York.—p. 579.

Action of Mercurochrome on Vas Deferens.—Rolnick concludes that mercurochrome is not a safe antiseptic for vasotomy because it is an intense irritant to the vas and produces permanent occlusion in the majority of cases. Meroxyl is more corrosive than mercurochrome. Mercurophen, although less irritating will, if employed in sufficient therapeutic strength, cause occlusion in an appreciable number of cases. Collargol occludes often enough so that it should be employed with caution or be substituted by chlorazene. Chlorazene in from 1:1,000 to 1:400 solutions can be employed without fear of permanent occlusion as a sequel.

Tuberculosis of Seminal Tract.—In the five cases reported by Dillon, the operative findings, and pathologic examinations indicate that probable primary tuberculous lesions of the seminal tract occur more often in the pelvic genital organs than is generally conceded. The only hope of radical cure or complete arrest of the disease is by radical operation—that is, excision of the tuberculous seminal tract. A better educated examining finger will detect involvement of the prostate and vesicles more often. If the patient with unilateral epididymitis is seen early enough, there may be hope of removing the entire tuberculous tract while it is still limited to one side, and saving the opposite seminal tract.

Intradural Anesthesia in Genito-Urinary Surgery.—This report embraces 160 cases in which spinal anesthesia was used, and such uniformly good results have been obtained that its use as a routine anesthetic is strongly advocated in surgery below the costal margin. The mortality compares very favorably with any other anesthetic and the postoperative complications, such as distention, nausea, and vomiting, have been markedly reduced. Fluids may be kept up before, during and after the operation, thus lessening the depletion of body fluids. The cardiorenal and respiratory systems, which in these conditions are already depressed, escape the additional burden which would be thrown on them by inhalation anesthesia, and thereby lessen the danger of uremia.

Regional Anesthesia for Major Urologic Operations.—The conclusions reached by Lowsley and Rogers after a brief experience with major urologic operations under regional anesthesia are that the administration of regional anesthesia for operations on the urinary organs is sufficiently simple to be mastered by an intelligent anesthetist and should be done by him and not by the busy surgeon. Practically any type of operation on the organs of the genito-urinary system can and should be done under regional anesthesia.

Medical Journal and Record, New York

120: 473-524 (Nov. 19) 1924

Upper Abdominal Postoperative Infection. H. M. Clute, Boston.—p. 473.
Pineal Gland and Its Function. J. H. Hutton, Chicago.—p. 476.
Outdoor Sleeping in Winter for Sick and Well. S. A. Knopf, New York.—p. 478.
Determinations Necessary to Adjust Insulin Doses. H. E. Le Fever, Glouster, Ohio.—p. 481.
Physiotherapy. J. T. Wright, Pittsburgh.—p. 483.
Interpretative Value of Physical Signs of Heart in Acute Rheumatic Endocarditis in Children. S. A. Blauner, New York.—p. 484.
Case of Staphylococcemia. M. Gordon, Brooklyn.—p. 488.
Dry Diet as Diagnostic Test as Well as Therapeutic Measure in Acidosis of Children. H. B. Sheffied, New York.—p. 489.
Rectal Surgery Abroad. J. F. Montague, New York.—p. 490.
Vaccine Therapy: Three Cases. H. L. Froscah, New York.—p. 494.
Therapy of Nonspecific Protein Reaction. R. H. Spangler, Philadelphia.—p. 495.
Historical Evolution of Doctrine of Crises in Disease. C. G. Cumston, Geneva, Switzerland.—p. 497.

SUPPLEMENT

Present Status of Treatment of Fibroid Tumors of Uterus. J. N. West, New York.—p. cxlv.
Radium Treatment of Fibroid Tumors of Uterus. G. S. Willis, New York.—p. cxlvi.
Roentgenotherapy in Myoma Uteri. W. H. Meyer, New York.—p. cxlvii.
Superiority of Radium Over Surgery in Cancer of Uterus. W. H. Kennedy.—p. cxlviii.
Plea for Preservation of Perineum and Modified Prophylactic Episiotomy for Prevention of Perineal Lacerations. D. Deutschman, New York.—p. cl.
Importance of Early Diagnosis in Ectopic Gestation. G. F. Douglas, Birmingham, Ala.—p. cliii.
Toxemia of Pregnancy Complicating Hydatiform Mole. I. Smiley, New York.—p. clv.
Spontaneous Rupture of Uterus. L. Goldstein, Camden, N. J.—p. clvi.

120: 525-576 (Dec. 3) 1924

When Should a Doctor Retire from Practice? R. T. Morris, New York.—p. 525.
Treatment of Gastric or Duodenal Ulcer. C. R. Jones, Pittsburgh.—p. 527.
Treatment of Lupus Erythematosus by Filtered Roentgen Ray to Gland-bearing Regions of Body. W. H. Goeckerman, Rochester, Minn.—p. 530.
Aortitis. G. S. Bel, New Orleans.—p. 533.
Treatment of Pneumonia. G. L. Waldbott, Detroit.—p. 536.
Atomizer in Nose and Throat Work. F. B. Kirkby, Chicago.—p. 541.
Focal Infection and Arthritis. N. P. Stauffer, Philadelphia.—p. 542.
Prophylaxis of Eclampsia. S. J. Scadron, New York.—p. 544.
Bismuth in Treatment of Syphilis. H. J. Schwartz and O. L. Levin, New York.—p. 547.

SUPPLEMENT

*Senile Heart. L. F. Bishop, New York.—p. clxi.
*Harmfulness of Caffein and Value of Alcohol in Old Age. O. T. Osborne, New Haven, Conn.—p. clxiii.
Nutrition of Aged. R. H. Rose, New York.—p. clxiv.
*Senile Pneumonia. M. W. Thewlis, New York.—p. clxvi.
Decrescent Arteriosclerosis. E. P. Boas, New York.—p. clxix.
Effect of Local and Regional Anesthesia in Operations on Aged. J. L. Amster, New York.—p. clxxiii.

Senile Heart.—Bishop says: The physician who is interested in this art of helping people with senile hearts will make a complete technical examination with charts and records and will direct them to come back once a year to have new charts made and compared with the year before. If the heart is in need of a certain type of lubricant in the shape of a simple remedy, he will teach these people how to take it continuously and not in the larger amounts than are urgently needed if the heart is allowed to get into serious trouble. Heart symptoms, such as severe pain becoming habitual, should be avoided, because one attack breeds another.

Effect of Caffein and Alcohol on Aged.—The action of caffein is to increase general nervous irritability, cause palpitation, sleeplessness, cerebral irritability, polyuria, and especially to stimulate the thyroid and parathyroids to abnormally increased activity, with the result of more nervous irritability and muscular irritability and trembling. Caffein often raises the blood pressure, when such an increase of blood pressure is not needed. Therefore, Osborne says, caffein (coffee and tea) in any form is likely to increase the production of uric acid, which in old people is especially likely to irritate the kidneys and to cause muscle and joint pains. It is evident that, except in an emergency for caffein therapeutic stimulation, coffee and tea can do nothing but increase the troublesome symptoms of old age. As to the value of alcohol in old age, a small amount of alcohol acts as a gentle narcotic to the brain, dilates the peripheral blood vessels, gives a feeling of surface warmth and warmth to the extremities, and depletes the internal congestion areas, often starts a failing appetite, quiets an irritable heart, and gives a general feeling of comfort to these persons. Alcohol has a positive food value, and if sugar is added (unless sugar is contraindicated) a food is furnished that readily oxidizes and is of benefit to old people. Alcohol as a heart stimulant in shock is of no value, but it is of great value as above indicated.

Treatment of Senile Pneumonia.—It is Thewlis' belief that it is proper to keep senile pneumonia patients out of bed whenever possible. Good nursing, liberal diet, plenty of fluids and rest form the basis of treatment. Catharsis prevents toxemia. Nitrogen retention and acidosis are common occurrences. Rest is of prime importance; infrequent examinations, digitalis, whisky and strychnin are advised. Preventive treatment consists in warm clothing; no chilling of body surfaces; removal of foci of infection; avoid exposure to common colds; turn patient several times a day when in bed as a result of fracture, etc.

Public Health Journal, Toronto

15: 491-540 (Nov.) 1924

Antisyphilitic Rob de Boyceau-Laffecteur. W. R. Riddell.—p. 491.
Public Health View Point of Typhoid Epidemic in Cochrane. W. E. George.—p. 497.
Industrial Hygiene and Medical Profession. J. G. Cunningham.—p. 508.
Medical Officer of Health: His Duty to Public and the Profession. J. F. Argue.—p. 511.
Some Modern Tendencies in Public Health Work. E. W. J. Hague, Winnipeg.—p. 521.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

5: 261-304 (Oct.) 1924

*Mechanism of Immunity to Antiplatelet Serum. M. E. Johnston.—p. 261.
*Bactericidal Property of Milk. F. S. Hanssen.—p. 271.
*Effects of Increased Intracranial Pressures on Medullary Centers. S. Tsubura.—p. 281.
*Cholesterol of Blood in Malignant Disease. A. N. Currie.—p. 293.
*Local and General Defences Against Infections, and Effect on Them of Vitamin Deficiency. W. Cramer and A. N. Kinsbury.—p. 300.

Mechanism of Immunity to Antiplatelet Serum.—Evidence presented by Johnston seems to negative the anti-antibody theory as an explanation of the immunity developed in animals against antiplatelet serum. The specificity of the platelet antibody produced in either the rabbit or goat is shown by its effect on the animal in vivo; and if this antibody plays the part of antigen in the production of an anti-antibody it should give rise to a specific anti-antibody. Johnston's experiments show that this is not the case, and that platelet antibody produced from one source is incapable of protecting the animal against platelet antibody produced from a second source. The so-called "anti-antibodies" "bear the seal of their place or origin"—in fact, the immunity developed depends on the normal serum fraction of the antiplatelet serum. It is obvious from these experiments that antiplalelet serum prepared in the rabbit is much more effective than antiplatelet serum prepared in the goat in producing an immunity. A dose of the former serum very rarely fails to protect against the second dose, while in the latter case the immunity is slight, and sometimes does not develop at all. The results of experiments of other workers are explained on the precipitin theory.

Bactericidal Property of Milk.—Hanssen finds that fresh milk possesses bactericidal properties when tested with *B. typhosus* and *B. paratyphosus* B. This effect is demonstrable during the first four hours at 37 C., and is evidently only temporary, and not traceable after twenty-four hours. Kept at the temperature of the room, a similar decrease of the bacteria takes place, starting later, but being of a longer duration. The bactericidal properties of milk have been found to very greatly in milk samples from the same cow at different seasons of the year. These bactericidal properties are further found in milk heated to 63 C. for thirty minutes, and in milk heated to 70 C. for fifteen minutes. This shows the fundamental difference between these bactericidal properties of the milk and the alexines of the serum, which are much less heat resistant. After heating to 75 C. for fifteen minutes, the bactericidal properties of the milk were lost. The theory is proposed that the bactericidal properties of milk are in close relation to the oxidizing enzymes of the milk. Hanssen suggests that the variations in the bactericidal power found at different seasons of the year may depend on variations in the food of the cow, influencing the content of oxidizing enzymes in the milk.

Effect of Increased Intracranial Pressure on Medullary Centers.—The effects of alterations of intracranial pressure on the condition of the central nervous system were studied by Tsubura. He found that raised intracranial pressure acts first on the respiratory center, causing transitory hyperpnea, followed by sudden stoppage of respiration. The centers next to be effected are the cardio-inhibitory and vasoconstrictor centers, in the form of an increase in the tonus and in reflex excitability. There are indications also of alterations in the cardio-accelerator and vasodilator centers. The vasoconstriction affects the whole body. There is some liberation of epinephrin, but this does not represent an important factor in causing the rise of blood pressure. High pressures lead to paralysis of the cardio-inhibitory and, finally, of the vasoconstrictor centers. The effects produced are partly the result of anemia, and partly due to the diminution of blood flow, with attendant accumulation of waste products.

Blood Cholesterol in Malignant Disease.—The blood cholesterol values of sixty-seven cases of malignant disease of various parts of the body were determined by Currie. In normal blood there is a seasonal rhythm in the cholesterol concentration. In malignant disease there is a similar periodic change in cholesterol content. From the data given in this paper, the marked seasonal parallelism would indicate a slight hypocholesterolemia in malignant disease.

Vitamin A Deficiency Lowers Resistance to Infections.—One of the most constant effects of a diet deficient in vitamin A is the development of bacterial infections of an avirulent type. The most frequent and most obvious infection is xerophthalmia. Sometimes there is a subcutaneous abscess in the neck. When vitamin A is again supplied these infections rapidly disappear. The investigation made by Cramer and Kingsbury had as its object to determine on what changes the diminution in the resistance against these infections depends. In addition to the general humoral defenses against infection, there are local defenses for certain organs, such as the intestine, the eyes and the lungs. A diet deficient in vitamin A impairs the efficiency of the general humoral defenses. The study of these agencies emphasizes the importance of the local defenses by showing that their breaking down will allow infections to set in even though the general defenses remain unimpaired.

British Journal of Radiology, London

20: 351-394 (Oct.) 1924

Influence of Radiology on Conceptions of Disease. T. Horder.—p. 352.
Value of Opaque Meal. S. Wyard.—p. 368.

British Medical Journal, London

2: 1033-1086 (Dec. 6) 1924

Psychiatry and Medicine. H. Devine and M. Devine.—p. 1033.
*Thrombo-Angiitis Obliterans. E. D. Telford and J. S. B. Stopford.—p. 1035.
Refraction Work in General Practice. A. MacRae.—p. 1038.
*Treatment of Sea Sickness. V. Moxey.—p. 1040.
Cure of Uterine Prolapse by Reeducation of Muscles Constricting Vagina. T. S. Wilson.—p. 1041.
Three Cases of Medicolegal Interest. D. J. A. Kerr.—p. 1042.
Ovarian Cyst Complicating Labor. C. J. G. Taylor.—p. 1043.
Hydronephrosis. H. P. W. White.—p. 1043.
Epilepsy. J. Collier.—p. 1045.

Thrombo-Angiitis Obliterans.—Telford and Stopford cite four cases. In three of these the femoral artery was patent, but almost the whole length of the popliteal artery was occluded. Sections of this vessel showed the lumen to be filled with loosely arranged fibrous tissue containing a number of minute channels, all of which possessed an endothelial lining and some a thin muscular tunic. The intima was a little thickened and slight fragmentation and fibrillation of the internal elastic lamina was seen. The amount of muscular tissue in the media was much reduced, and the fibers were separated by fibrous tissue. The adventitia was markedly increased in thickness, and contraction of this had caused considerable reduction in the diameter of the vessel. The popliteal vein exhibited some irregular thickening of the intima and part of the lumen was occupied by a recent thrombus. Fibrous tissue was present in considerable amount between the muscle fibers of the media, and the outer coat was greatly thickened. The changes found in the posterior tibial artery were almost identical with those in the popliteal, but less thickening of the intima was discovered in the anterior tibial vessels, and the dorsalis pedis artery was normal. A section of the lower part of the internal saphenous vein manifested changes similar to those found in the popliteal artery. In the second case, there was complete occlusion of the lower part of the popliteal artery for a distance of about three-quarters inch, and sections at this level revealed changes similar to those recorded in the first case, except for the greater density of the tissue occupying the lumen. No operation had been done in the third case. In the fourth case there was complete occlusion of the whole popliteal artery, and microscopic sections revealed a similar picture to that seen in the first case, but in addition to the other features a group of lymphocytes was found in the tissue occupying the lumen.

Treatment of Sea Sickness.—For the treatment of sea sickness Moxey administers suppositories containing 15 grains of chloral and 30 grains of bromid. The best results are obtained by using the suppositories in the following manner:

As a preventive, one should be inserted morning and evening for the first three days at sea. If the patient is sick when first seen, a suppository should be administered at once, and repeated every two or three hours, as required, for four doses. If the sea passage is short, a suppository should be used three hours before going on board, and again before the ship starts. There is no danger whatever, provided the administration is stopped when somnolence supervenes. Subsidiary measures should not be neglected. These are recumbency (in bunk in cabin is the best), warmth, keeping the eyes shut and the use of an abdominal belt.

Journal of Oriental Medicine, Dairen, Manchuria

2: 209-262 (Aug.) 1924

*Experimental Study of Kidney Affected by Cholera Toxin. S. Fujii.—p. 209.
Diagnosis and Therapy of Leishmaniosis. R. Jemma.—p. 228.
*Malarial Fever Treated per Rectum with Quinin. T. Suzuki.—p. 233.
*Special Causes of Infant Mortality in Dairen. T. Suzuki.—p. 239.
Case of Xanthoma Complicated with Lymphatic Leukemia in Child. O. Nagahara.—p. 246.
Fushun Measles Epidemic of 1923. J. Shima.—p. 254.
Value of Basal Metabolism Studies in Diagnosis of Acidosis. G. Yastomi and Senga.—p. 255.
Experimental Study on Shortening of Coagulation Time of Blood. B. Sawada.—p. 257.
Acanthosis Nigricans (Naevus systematiratus). M. Hitaka.—p. 258.

Effect of Cholera Toxin on Kidney.—Fujii has studied the problem of the anuria in cholera. He is of the opinion that it is caused by the swollen epithelial cells pressing on the tubules leading to the glomeruli and preventing these from functioning.

Quinin Enemas in Treatment of Malaria.—Suzuki reports three cases of malaria in children in which quinin was administered per rectum, a method devised by him. He injects 100 c.c. of a 5 per cent. solution of quinin hydrochlorid as an enema every day until the temperature remains normal. The results are said to be uniformly good.

Causes of Infant Mortality in Dairen.—The principal causes of infant mortality in Dairen are influenza, beriberi, enteritis, measles, bronchopneumonia and whooping cough.

Journal of Pathology and Bacteriology, Edinburgh

27: 349-479 (Oct.) 1924

*Histopathologic Observations in Unsuspected Case of Chronic Epidemic Encephalitis in Young Child. C. Da Fano and H. Ingleby.—p. 349.
*Pathologic Changes of Alveolar Passages in Disease of Lungs. J. Harkavy.—p. 366.
*Urea Retention in Experimental Oxalate Nephritis. J. S. Dunn, A. Haworth and N. A. Jones.—p. 377.
*Complement Fixation Test in Tuberculosis. F. E. Williams and L. M. Bryce.—p. 401.
*Modification of Bone Lesions in Rickets Due to Mobility of Part. J. P. M'Gowan.—p. 409.
*Rats as Possible Carriers of Foot-and-Mouth Disease. J. M. Beattie and D. Peden.—p. 415.
Bone Marrow Embolism of Lungs in Rabbit. J. S. Dunn.—p. 425.
Bacteriologic Study of Fowl Typhoid and Allied Infections with Special Reference to Three Epidemics. J. W. Edington.—p. 427.
Fermentative Reactions of Diphtheria Bacillus. C. C. Okell.—p. 439.

Chronic Epidemic Encephalitis with Total Brain Involvement.—Da Fano and Ingleby report the case of a bodily and mentally well developed female child, with healthy antecedents, which developed at the age of 1 year and 8 months whooping cough and bronchopneumonia, from which she apparently recovered. Two weeks later signs of an affection of the nervous system appeared and gradually grew worse. On admission to hospital her mental condition resembled idiocy and the following symptoms were noted: atypical movements of the head and trunk suggestive of blindness, slight convergent strabismus, soft palate immobile and palatal reflex absent; skeletal muscles flabby and wasted; incontinence of urine and feces; epileptiform fits; fundi normal; no fever; cerebrospinal fluid under pressure without excess of cells and bacteriologically sterile; Wassermann test negative in the blood and cerebrospinal fluid. Under treatment only general nutrition and difficulty in swallowing improved slightly. She was discharged after about two months but was readmitted two weeks later with bronchopneumonia, from which she died a year after the onset of the nervous trouble. Clinically, the case was considered as a form of cerebral degeneration akin to juvenile amaurotic idiocy. Histopathologic investigations revealed the presence of changes essentially similar to those seen in subacute cases of epidemic encephalitis but characterized by an unprecedented severity and diffusion to all cerebral regions. The case was remarkable also owing to exceptionally widespread degenerative lesions of the nerve cells associated with extremely interesting phenomena of neuronophagia. The authors are of the opinion that the present case is perhaps the only instance of chronic epidemic encephalitis with total brain involvement so far observed in a young child.

Hypertrophy of Lung Musculature.—In a study of the significance of the muscultature in the alveolar passages and interstitium of the lung, 176 lungs were studied by Harkavy. Hypertrophy of this musculature was found in varying extent in the following groups of cases: (1) Chronic cardiac disease with slight and marked stasis associated with induration. (2) Chronic cardiac disease plus total pleural obliteration of one or both sides. Here the hypertrophy was more marked than in Group 1, especially in areas of scars and thickened pleura. (3) Cases of unilateral or bilateral pleural obliteration. The hypertrophy was noted in the interstitium as well as in the alveolar passages. It was also present in the septa, thickened pleura, and in increased amount about blood vessels and bronchi. (4) In two cases of essential emphysema studied, ten cases of compensatory and one of atrophic emphysema. In anthracosis and secondary indurative processess of the lung only moderate changes were observed.

Urea Retention in Oxalate Nephritis.—In oxalate nephritis there is serious interference with the excretion of urea so that this substance accumulates in the blood. From the action of a single dose of oxalate of sufficient amount, changes are produced in the kidney which result in interference with the excretion of urea for periods up to a month at least. The excretion of water is only temporarily arrested and sometimes not markedly; at later stages polyuria may develop. The possible relationship of the impaired secretion to the renal changes in oxalate nephritis is discussed, by Dunn, Haworth and Jones and it is suggested that the functional defects are most easily explained on the theory that urine is formed by a process of filtration and reabsorption.

Complement Fixation Test in Tuberculosis.—On the results of the analysis of 601 cases Williams and Bryce base the conclusion that the complement fixation test in tuberculosis is specific, but it is not completely satisfactory as a diagnostic agent. A negative result does not exclude tubercle. A strongly positive reaction is, with few exceptions, evidence of the disease in an active form. The routine performance of the Wassermann test simultaneously with it draws attention to the possibility of a syphilitic basis for the lesions present in some cases suspected of being tuberculous.

Mobility Causes Bone Lesions in Rickets.—M'Gowan suggests that many of the changes seen at the epiphyseal ends of bones in rickets and in scurvy are due to mobility.

Rats as Carriers of Foot and Mouth Disease.—Experimental study and examination of wild rats lead Beattie and Peden to assert that their findings suggest strongly that rats may be the carriers of foot and mouth disease.

Journal of Tropical Medicine and Hygiene, London

27: 271-282 (Oct. 15) 1924

Identification of Glycerol by Bacterial Method. A. Castellani and F. E. Taylor.—p. 271.
Cancer as Public Health Problem in Siam. R. W. Mendelson and A. G. Ellis.—p. 274.
Poisoning by Bamboo Hairs. H. N. Ridley.—p. 278.
*Case of Urinary Amebiasis. A. N. Worsley and J. E. Bateman.—p. 278.

Urinary Amebiasis.—Only a dozen cases of this kind are said to be on record. In the case cited by Worsley and Bateman the symptoms were as follows: On rising in the morning the patient experienced a dull ache on the right side between the ribs and the iliac crest posteriorly near the vertebral column. This rapidly became worse and was continuous. The position which afforded greatest relief was lying down, remaining perfectly still with the right thigh flexed. There

was frequency of micturition the night before and during the attack. The bladder felt full after micturition, about a dram of urine being passed at each effort. There was no straining. After an hour, vomiting of mucus and bile set in without nausea, but suddenly and without warning. The patient also had two attacks of jaundice. The authors are of the opinion that this is a case of urinary amebiasis, principally infecting the kidney itself or its pelvis. The occurrence of jaundice on two occasions supports the view that the liver was also slightly involved, and the authors put forward the suggestion that the condition may have originated from a blood infection.

Lancet, London

2: 1107-1160 (Nov. 29) 1924

Consciousness. C. S. Myers.—p. 1107.
*Obesity in Children; Carbohydrate Metabolism; Modification by Administration of Certain Ductless Glands. F. S. Langmead and E. G. B. Calvert.—p. 1111.
*Effect of Splenectomy in Egyptian Splenenomegaly. Seventy Cases. R. B. Coleman and J. E. Bateman.—p. 1116.
*Effect of Splenectomy on Production of Experimental Purpura. S. P. Bedson.—p. 1117.

Effect of Ductless Gland Therapy in Obesity in Children.—Langmead and Calvert have found, as others have found before, that the blood sugar curves in cases of great obesity in children, too readily called hypopituitarism, are diverse in their outlines. Incidentally, their experiments appear to show that pituitary gland substance given by the mouth is not inert. As far as carbohydrate metabolism goes, the blood sugar curve being used as an index, it seems logical to administer that lobe of the pituitary which produces the better effect on sugar tolerance. However, considering the cases generally, the whole gland gives quite good results. In one case the addition of a small dose of thyroid improved matters. The results of the experiments, taken collectively, might be construed as indicating that a properly balanced pluriglandular therapy is required for cases such as these; but the suggestion has a pharmacologic rather than a physiologic basis. Thyroid extract may reduce weight in cases of this kind, but it can hardly be considered an ideal remedy per se, in that it does not restore carbohydrate metabolism to normal. Possibly the production of a normal blood sugar curve may prove a useful guide to treatment, as in on case cited. Possibly, too, a somewhat restricted diet, in which the protein is relatively increased, the carbohydrate curtailed, and the fat practically eliminated, may constitute one of the most effective means of stimulating metabolism and reducing weight. The method of preparation from the testes of animals of what may possibly be their internal secretion is described, and also the very considerable loss in weight associated with its administration in one of the cases reported.

Effect of Splenectomy in Cases of Splenomegaly.—In seventy cases of Egyptian splenomegaly, Coleman and Bateman removed the spleen. Eleven patients died. Most of the deaths were presumably due to a type of late shock in which the patient never seems to rally from the operation. There appears to be some unknown factor in certain cases of this disease when the heart, apparently normal, suddenly gives way, causing a quick and fatal collapse. A fair number of the splenectomy cases have been traced and examined, and these patients have nearly all been found well and strong, many of them exceptionally so. In none of them has there appeared any sign of ascites.

Effect of Splenectomy on Experimental Purpura.—The effect of splenectomy on the platelet content of the blood and the effect of this procedure on the course of experimental purpura produced by antiplatelet serum was the problem investigated by Bedson. He found that splenectomy gives rise to a great increase in the number of pletelets in the circulation. In the guinea-pigs this rise is manifest forty-eight hours after operation, reaches its maximum about the tenth to the fourteenth day, and falls again to normal in three or four weeks. Splenectomy in the guinea-pig affords a degree of protection to the production of experimental purpura by means of an antiplatelet serum. The spleen is only indirectly concerned in the mechanism of this pathologic state. Splenectomy cannot be relied on to give any but temporary relief in the treatment of purpura hemorrhagica.

Medical Journal of Australia, Sydney

2: 489-514 (Nov. 8) 1924

Criminal Abortion and Medical Profession. H. Shelton.—p. 489.
Forensic Pathology of Abortion. C. H. Mollison.—p. 492.
Abortion and Professional Secrecy. A. V. M. Anderson.—p. 495.
Case of Chorion Epithelioma with Cerebral Metastases. J. S. Green.—p. 498.
Endometrio-Myoma. F. C. Crossle.—p. 501.
Vaginitis in Child. F. L. Bignell.—p. 501.

2: 515-540 (Nov. 15) 1924

Heliotherapy. D. Hardie.—p. 515.
Early Australian Surgery. N. J. Dunlop.—p. 522.
Cutaneous Horn of Right Upper Lid. J. B. Lewis.—p. 529.

Medical Journal of South Africa, Johannesburg

20: 57-82 (Oct.) 1924

*Case of Cholecystitis with Cardiac Involvement. W. Welchman and H. L. Heimann.—p. 59.
Case of Successful Grafting of Ribs into Skull for Cranial Defect. J. J. Levin.—p. 61.
Modern Conceptions in Regard to Diet of Healthy Infancy in Childhood. E. P. Baumann.—p. 63.
Local Action of Oxidizing Enzymes. A. Verwey.—p. 65.

Cholecystitis Causes Symptoms of Thyroid Disease.—Welchman and Heimann record the case of a woman who complained of palpitation, indigestion, and hunger pain. She had a fine tremor of the hands and slight exophthalmos with some fulness of the thyroid. The lips were a little blue. On standing the pulse was 148 per minute and regular. On lying the pulse rate varied from 90 to 120 per minute; sometimes it was bigeminal and sometimes it was grossly irregular. The heart was normal in size and there was no valvular murmur, but an irregularity was present on lying down which corresponded to the pulse irregularity. The tremor, exophthalmos and increase in the size of the thyroid suggested a septic focus. It proved to be a case of cholecystitis with adhesions to the surrounding viscera. The patient was operated on—the gallbladder being removed, and immediately she showed signs of improvement.

Practitioner, London

113: 325-392 (Nov.) 1924

Latent Sepsis. K. Goadby.—p. 325.
Treatment of Empyema and Acute Abscess of Lung. W. H. C. Romanis.—p. 331.
Relative Value of Roentgen Rays in Various Forms of Malignant Disease. F. Hernaman-Johnson.—p. 342.
Treatment of Anorexia Nervosa in Children. B. Myers.—p. 351.
Diagnosis and Treatment of Early Cases of Subacute Cholecystitis. W. Bain.—p. 358.
Acid Dyspepsia. W. Dickson.—p. 366.
Combined Tests in Syphilis. J. Menton.—p. 374.
Experiences at a Speech Clinic. E. W. Scripture.—p. 381.

113: 393-454 (Dec.) 1924

Tuberculosis in India. R. H. Charles.—p. 393.
Injection Method for Treatment of Hemorrhoids. H. G. Anderson.—p. 399.
Anesthesia for Removal of Tonsils and Adenoids. J. D. Mortimer.—p. 410.
*Method of Transfusing Pure Blood. A. Becart and A. Churchill.—p. 415.
Henoch's Purpura: Two Cases. J. Gracie.—p. 419.
Treatment of Chronic Arthritis by Heat and Light. A. G. Dampier-Bennett.—p. 426.
Tuberculosis as Cause of Malnutrition in Child. A. H. Shennan.—p. 434.
Skin Grafting in General Practice. A. P. Bertwistle.—p. 440.
Bonesetter and His Professional Brother. G. Robertson.—p. 442.

Transfusing Pure Blood.—The method described by Becart and Churchill is noteworthy in that it combines simplicity of technic with the advantages of pure blood transfusion. By means of a special syringe blood can be withdrawn and injected under perfectly air-tight conditions. Any possible cause of coagulation is eliminated. The whole technic consists in a simple venous puncture, followed by an intravenous injection.

South African Medical Record, Cape Town

22: 487-510 (Nov. 8) 1924

Use of Obstetric Forceps. E. C. Crichton.—p. 488.
Dangers of Forceps Delivery. A. S. Wells.—p. 490.
Pituitrin vs. Forceps. C. W. Comrie-Sharp.—p. 492.
Importance of Avoiding Forceps Application. R. L. Impey.—p. 492.
Application of Forceps in Abnormal Presentations. F. K. te Water Naude.—p. 491.
Indications for Forceps. F. S. Charnock.—p. 496.
Anesthetic Aspect. R. M. Muir.—p. 497.
Roentgen-Ray Treatment of Fibroids and Uterine Hemorrhages. J. van Rooijen.—p. 500.

Bulletin de l'Académie de Médecine, Paris

92: 1199-1272 (Nov. 25) 1924

Standardization of Biologic Products in France. Netter.—p. 1205.
Annual Report on Official Welfare Work for Children in France. P. Nobécourt.—p. 1210.
*Infected Gastric Ulcer. P. Duval.—p. 1257.
*Bone Grafts in Forearm. Mauclaire.—p. 1259.
*Stovain Anesthesia and Azotemia. J. Abadie.—p. 1261.
*Volkmann's Ischemic Contracture. Jeanne.—p. 1266.
*Fat Hernia in Orbit. Bourguet.—p. 1270.

Rôle of Infection in Gastric Ulcer.—Duval recalls that an operation on an infected ulcer of the stomach may be complicated by peritonitis, defective healing of the wound or perigastric suppuration, also by bronchopneumonia. The latter complication is sometimes erroneously ascribed to the effect of the anesthetic. Only patients without, or with very mild infection should be operated on.

Bone Grafting in Osteosarcoma of Radius.—Comparing the results in two cases of osteosarcoma in the lower part of the radius, Mauclaire concludes that autoplastic bone grafting —confirming general experience—often succeeds, while the homoplastic usually fails.

Intraspinal Anesthesia and Azotemia.—Abadie examined twenty-six patients before and after intraspinal injection of 0.04 gm. of stovain, administered before different operations. The injection was followed by an increase of urea in the blood, from 0.50 to 1 gm., persisting usually about six days. The azotemia was more pronounced in grave and tedious operations. The findings with test polyuria, methylene blue and phenolsulphonephthalein tests corresponded to the azotemia, the end of the elimination being always delayed. Abadie explains that neither operative injuries, nor direct toxic effect from the stovain can be incriminated, as stovain is entirely eliminated in a few hours. It does not involve directly the nerves of the kidney, but acts probably on the sympathetic system.

Volkmann's Ischemic Contracture.—Jeanne reports two cases with ischemic contracture of the flexors of the fingers, and paralysis, in children, aged 11 and 13. Surgical intervention was followed by a rapid and complete recovery. He describes the technics used.

Case of Fat Hernia in Orbit.—Bourguet observed a case of fat hernia in the orbit involving the eyelids. He details his surgical intervention.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 1573-1652 (Nov. 21) 1924

*Insulin in Treatment of Xanthoma. Chauffard et al.—p. 1573.
*Primary Tuberculous Infection in Adult. Lemierre et al.—p. 1582.
*Gangrene Complicating Tuberculosis. Lemierre and Bernard.—p. 1586.
*Angina Pectoris and Epidemic Encephalitis. C. Laubry.—p. 1588.
Spirochetosis Inducing Jaundice. M. Garnier.—p. 1591.
Angina Pectoris and Thyroid Insufficiency. Laubry et al.—p. 1592.
Intratracheal Injections of Iodized Oil for Exploration of Lungs. A. Giraud and L. de Reynier.—p. 1598.
*Synovitis and Bursitis from Serum Sickness. L. Veillet.—p. 1602.
*Anemia in Syphilitic Aortitis. I. Hatzieganu.—p. 1605.
Gangrene with Pulmonary Tuberculosis. Caussade et al.—p. 1607.
*Hemorrhagic Pancreatitis. Laignel-Lavastine and Potez.—p. 1615.
*Serum from Thyroidectomized Sheep. Coulaud and Lougnon.—p. 1620.
Phenobarbital in Asthma. P. Pagniez.—p. 1623.
*Meningitis from Micrococcus Melitensis. G. Lemaire.—p. 1636.
*Mycosis of Lung Simulating Tuberculosis. A. Philibert and F. Cordey.—p. 1644.

Insulin in Treatment of Xanthoma.—Chauffard, Brodin and Yovanovitch describe a case of disseminated xanthoma nodules on the forearms, knees and ankles, in a diabetic man, aged 50. There was no connection between the blood sugar and the fat content of the blood, the glycemia reaching only 1.7 gm. per liter while the lipemia totaled 93 gm. Neutral fats predominated over the lipoids. The curve of cholesterol paralleled the curve of lecithin. Under insulin treatment, the neutral fats dropped almost 90 per cent.; the lipoids 75 per cent., and the xanthomas subsided. They accept that xanthoma in diabetes, like xanthoma from liver disturbance, reveals deranged fat metabolism, as well as cholesteremia. Consequently they suggest that insulin may prove useful in treatment of xanthoma of hepatic origin.

Case of Primary Tuberculous Infection in Adult.—Lemierre, Kindberg and Bernard describe the necropsy findings in a man, aged 31, with fulminating miliary tuberculosis. The lesions, though of only fifteen days' duration, were generalized in both lungs, also in all the viscera, with a small cavity, corresponding to a peribronchial gland in cheesy degeneration, in the right lung. No cicatricial lesions, as from an old tuberculous affection, existed. The disease seemed to be a primary tuberculous infection.

Pulmonary Gangrene Complicating Miliary Tuberculosis.—Lemierre and Bernard observed a case in a man, aged 51, in which a fulminating form of gangrene caused death in eight days in the course of miliary tuberculosis of about six weeks' standing.

Angina Pectoris and Epidemic Encephalitis.—Laubry refers to a patient, about 60 years old, with epidemic encephalitis, and a predominant syndrome of angina pectoris. He is inclined to explain the angina paroxysms by participation of the vagosympathetic system in the morbid process in the brain.

Synovial Membranes and Bursae Affected in Serum Sickness.—Injection of tetanus antitoxin was complicated in Veillet's patient, aged 42, by lesions of the synovial membranes and bursae. He emphasizes that no changes appeared in the joints. This localization of the affection may be explained by functional rather than by anatomic conditions. The synovial membranes and bursae, being fastened to bone surfaces, are more subject to mechanical irritation.

Grave Anemia with Syphilitic Aortitis.—On the basis of seven observations of women, aged from 40 to 58, Hatzieganu calls attention to a grave anemia coexisting with syphilitic aortitis. He calls it the aortitis-anemia syndrome. The more frequent occurrence of the syndrome in women at the time of the menopause may be due to the disturbed internal secretion, since anemia is connected with deficient functioning of the ovaries. Insufficient functioning of the bone marrow enhances in turn the receptivity of the hematopoietic tissues for syphilitic infection. In men, the aortitis is liable to be masked by emphysema, in women, by anemia.

Hemorrhagic Pancreatitis.—Laignel-Lavastine and Potez report a case of hemorrhagic pancreatitis in a woman, aged 40, caused by biliary lithiasis, and by abrupt suppression of morphin. They emphasize that the diagnosis is difficult in such cases as the severe pain in the abdomen may be ascribed to gallstone colic. The typical lesions of biliary lithiasis were associated with a secondary chronic pancreatitis. The hemorrhagic syndrome, which occurred at the end of a course of treatment for morphin addiction, might have been produced by a rapid augmentation of the pancreatic function under the morphin suspension.

Serum of Dethyroidized Animals in Exophthalmic Goiter.—Treating eight patients with exophthalmic goiter with this serum, Coulaud and Lougnon noted a marked improvement in one case. No changes were manifest in four, while aggravation of the condition occurred in three instances. Evidently the serum from thyroidectomized animals does not contain any antithyroid substances.

Case of Meningitis from Micrococcus Melitensis.—Lemaire cites an observation, which he claims to be the only one on record, of cerebrospinal meningitis caused by *Micrococcus melitensis*. The patient was a woman, aged 25, who recovered. The high sugar content of the cerebrospinal fluid was very unusual with bacterial meningitis.

Yeast Causing Affection in the Lung.—Philibert and Cordey examined a man, aged 34, with a lung affection, resembling bronchopneumonia, with fever during several months. The disease developed afterward in a chronic form, persisting for five years. The clinical picture resembled pulmonary tuberculosis. Repeated examinations of the sputum proved the absence of tubercle bacilli, and the presence of *Saccharomyces granulatus*. Only four such cases, with skin and bone lesions, caused by this species, seem to have been reported to date. This case may be the first with a localization of the germs in the lungs. Complete recovery occurred under iodid and methylene blue treatment. This yeast seems to be refractory to iodid alone.

Comptes Rendus de la Société de Biologie, Paris

91: 1180-1233 (Dec. 5) 1924. Partial Index

*Leukocyte Reaction in Malignant Tumors. B. Sokoloff.—p. 1183.
*Vaccination Against Chicken Cholera. Brocq-Rousseu et al.—p. 1185.
Fixation of Ultraviolet Radiant Energy by Manganese. Rousseau.—p. 1190.
Measurement of Curves in Spirochetes. Achitouv.—p. 1192.
Bacteriologic Diagnosis of Bacillus Asthenogenes. Bernard.—p. 1197.
Benzidin Test for Leukocyte Granules. A. C. Hollande.—p. 1203.
*Purification of Microbian Filtrates. Goiffon and Jaubert.—p. 1206.
*The Vagus in Chronaxia in the Heart. Lapicque and Veil.—p. 1207.
*Bacteriophagy in Filtered Cultures. P. Hauduroy.—p. 1209.
*Retrobulbar Injections and Intra-Ocular Tension. Bonnefon.—p. 1214.
*Long Incubation in Rabies. A. Rochaix.—p. 1217.
Ash Content of Liver on Different Diets. Policard et al.—p. 1219.
Significance of Bizzozero's Nodules. Favre.—p. 1220.
Anesthesia in Small Laboratory Animals. Debénédetti.—p. 1222.
Action of Epinephrin on Skin Absorption. B. Douglas.—p. 1223.
*Bacteriophagy in Typhoid Fever. Ciuca and Manoliu.—p. 1225.
*Changes in Organs During Thirst. Garoteanu and Derevici.—p. 1230.
*Hyperglycemia from Removal of Salivary Glands. T. and M. Cahane.—p. 1232.

Leukocyte Reaction in Malignant Tumors.—Sokoloff's research covered twenty-three cases with cancer, six operated on, the others exposed to roentgen-ray and radium treatment. His conclusion is that the leukocytic reaction may be the causal factor in malignant invasion of the tissues. A connection between this process and an increased polymorphonucleosis, as well as a diminished lymphocytosis was evident. The participation of leukocytolysins in generalization of the cancer seemed to be considerable.

Oral Vaccination Against Chicken Cholera.—Brocq-Rousseu, Truche and Urbain succeeded in vaccinating hens by the digestive tract with *Bacterium gallinarum* killed by alcohol-ether. The vaccinated fowl resisted a lethal dose of the living culture, injected intravenously. Living cultures, administered by the mouth, induced immunity against several times the lethal dose.

Sedimentation Method Instead of Filtration.—Goiffon and Jaubert describe an easy method to clear the fluid of a culture from the microbes. They add to 100 c.c. of it 1 c.c. of a 2.5 per cent. solution of calcium chlorid and 5 c.c. of a 10 per cent. solution of sodium phosphate. As the resulting calcium phosphate settles, it carries down with it all the impurities in the fluid.

Vagus in Auriculoventricular Chronaxia.—Lapicque and Veil's experiments on frogs showed that stimulation of the left vagus caused a more pronounced reduction in auriculoventricular chronaxia than stimulation of the right nerve. This may be explained by the different distribution of the two nerves in the heart.

Secondary Cultures in d'Herelle's Phenomenon.—Hauduroy found that dysentery bacilli and bacilli of the typhoid-colon bacillus group, under the action of the bacteriophage became so small that they were able to pass through porcelain filters.

Intra-Ocular Tension from Retrobulbar Injections.—Bonnefon states that neither epinephrin nor procain exert a specific action on intra-ocular tension. The effect is merely mechanical, from pressure by the mass of the fluid injected.

Long Latency of Rabies in Man.—Rochaix reports a case of rabies in a young man after a latent period of over a year, in spite of prompt specific treatment. It developed coincidently with an acute pleuropulmonary affection after exposure to cold. Intramuscular injection in guinea-pigs of an emulsion of the bulbar substance caused death from rabies by the eighteenth or twenty-fourth day. The routine prophylactic treatment had not been intensive enough for this case.

Cultures and Lysis in Typhoid Fever.—Ciuca and Manoliu found the bacteriophage in only seven of their sixty cases of typhoid fever. The course and the outcome of the disease did not seem to have any connection with the presence of the transmissible lysins. The natural immunity and immunity acquired by vaccination did not seem to be in any relation to the bacteriophagy. The inhibiting action of filtrates of cultures from typhoid stools and blood cannot be attributed to transmissible lysis.

Histologic Changes in Thirst.—Garofeanu and Derevici studied the histologic changes in dogs on a dry diet, with water completely excluded. Dilatation of vessels in certain organs, especially in the lungs, liver and the thyroid was noted in the first days. The vascular distention gradually increased to actual congestion as the thirst became more intense. Then iron pigment granules appeared in the blood and in the cells of the organs. Arterial hypotension from the lack of fluids, and possibly a diminished internal pressure, may explain the phenomena. Considering the disagreeable sensations caused by thirst, it may be assumed that the nervous system shares also by reflex action in the development of the congestive lesions.

Hyperglycemia from Removal of Salivary Glands.—Removal of both submaxillary glands in six dogs, as performed by T. Cahane and M. Cahane, resulted in an increased glycemia. The animals did not present any signs of cachexia up to several months later, and one of the dogs was still alive a year afterwards. The sugar content of the blood rose from 0.78 to 2.01 per thousand by the twelfth day in one dog.

Presse Médicale, Paris

32: 957-968 (Dec. 3) 1924

*Modern Views on Osteosarcoma. R. Leriche and A. Policard.—p. 957.
*Appendectomy at Gynecologic Laparotomies. O. Beuttner.—p. 958.
Relations Between Edema and the Blood Pressure and Avidity of the Plasma for Fluid. L. Lenaz.—p. 961.

Modern Views on Etiology of Osteosarcoma.—Leriche and Policard believe that the classic conception of osteosarcoma should be changed, conforming to the new views of osteogenesis. The osteoblast is not considered a specific element but as a variety of connective-tissue cell. Consequently, the osteoblast does not form the specific tumor; the osteosarcoma is not an osteoblastoma. Their hypothesis is that osteosarcoma, as well as osteochondrosarcoma, is a common sarcoma which originates from the connective tissue of the bone. The osseous tissue in it is not specific.

Appendectomy with Gynecologic Laparotomy.—Beuttner, examining 1,400 personal cases of gynecologic laparotomies, states that the coexistence of gynecologic disturbances with appendicitis is a mere coincidence. Still he admits that a right adnexitis may sometimes produce changes in the superficial layers of the appendix. Simultaneous removal of the appendix should not be performed only on account of macroscopic changes. An appendectomy is to be considered as a complication which may have an unfavorable effect on the gynecologic operation. He recalls that in one of König's cases, as in two of his own cases of adnexitis, the fatal issue must be ascribed to a prophylactic appendectomy.

32: 969-980 (Dec. 6) 1924

The Oscillometer Curve. Aubertin and Pascano.—p. 969.
*Three Cases of Anthrax Septicemia. Jagnov.—p. 970.
*Three Cases of Embolectomy. J. Sénèque.—p. 972.

Necropsy Findings in Anthrax Septicemia.—Jagnov's necropsy findings in three cases of anthrax septicemia showed anthrax lesions in almost all the viscera. The liver was the only organ which presented no macroscopic or microscopic changes. This fact tends to confirm Roger's conclusion that the liver withholds and destroys the anthrax bacilli. No trace of inflammation was manifest in the viscera, contrary to what occurs in experimental anthrax. Grave nutritive disturbances, focal or diffuse necrosis were noted in the organs, where the vessels were obstructed with the bacilli.

Embolectomy.—Sénèque cites three recent operative cases of embolism, two of the femoral artery, one of the iliac artery, in patients with heart disease. The embolectomy was followed by immediate restoration of the local circulation in two instances. Reexamination of one patient six months later showed the artery still permeable. One patient succumbed to cardiac insufficiency although the local circulation had been restored. Sénèque advocates arteriotomy in every obliteration of an important artery; it should be performed early to ward off secondary thrombosis and a lesion of the internal coat as well. (The cases cited were summarized in THE JOURNAL when first published, June 14, 1924, p. 2000 and elsewhere. Olivecrona's second embolectomy on the same patient was mentioned, Dec. 20, 1924, p. 2056.)

Pediatria, Naples

32: 1305-1368 (Nov. 15) 1924

*Etiology of Chickenpox. L. Auricchio.—p. 1305.
Laryngeal Type of Tuberculous Meningitis. E. Mensi.—p. 1312.
Vaccination Against Scarlet Fever. D. Rottini.—p. 1320.
Transactions of the Eleventh Pediatric Congress.—p. 1322.

Etiology of Chickenpox.—Auricchio obtained from the blood and pustules of twenty patients with chickenpox cultures of gram-positive cocci and diplococci. The germs grew exclusively on Di Cristina's and Tarozzi-Noguchi's mediums and were filtrable. The serum of the patients gave agglutination and complement fixation reactions beginning from the fifth day of the disease.

Policlinico, Rome

31: 1491-1538 (Nov. 17) 1924

31: 1539-1574 (Nov. 24) 1924

Italian Medical Congresses.—These two issues contain the transactions of the Thirtieth Italian Congress of Internal Medicine, of the Eleventh Pediatric Congress and of the annual meeting of the Italian Società di Oto-Neuro-Oftalmologia, all held in October, the transactions of the Thirty-First Italian Surgical Congress, of the Third Urologic, the Fifteenth Orthopedic, the Twenty-First annual meeting of the Italian Società di Laringologia, Otologia e Rinologia, the First Ophthalmologic Congress, the Thirteenth Stomatologic and of the Second Congress of the Italian Association of Women Physicians. The internists and surgeons held joint meetings to discuss spleen and suprarenal disease. Periarterial sympathectomy was the main topic before the surgical congress.

Brazil-Medico, Rio de Janeiro

2: 239-250 (Oct. 25) 1924

*Hypertrophy from Congenital Syphilis. A. Gavião Gonzaga.—p. 239.
*Functional Aortic Insufficiency. Oswaldo de Oliveira.—p. 240.

Hypertrophy of Face from Congenital Syphilis.—The diffuse syphiloma of the lower part of the face dated from the girl's fifteenth year. The upper lip measured 7 cm. and was 6 cm. thick, the commissures 14 cm. apart. The aspect of the lower part of the face at the age of 19 suggested the snout of a hippopotamus, as is manifest in the illustrations.

Functional Aortic Insufficiency.—This is a chapter from De Oliveira's work now in press. He denies the possibility of a purely functional aortic insufficiency. The lesions which entail the insufficiency are established and progressive, and the insufficiency persists and increases.

Prensa Médica, Buenos Aires

11: 585-616 (Nov. 30) 1924

*Kala-Azar in Children. Acuña et al.—p. 585.
Sugar Content of Normal Urine. Barlaro and Crocco.—p. 593.
Unusual Structure of Wall of Branchial Fistula. M. Balado.—p. 598.
History of Origin of Term "Syphilis." L. Silva.—p. 599.
Organic Acids in Urine in Cancer. A. H. Roffo and H. Degiorgi.—p. 603.
Antagonism Between Ions in the Plasma. A. H. Roffo and L. M. Correa.—p. 606.

Kala-Azar in Children.—Acuña, Casaubon and Bettinotti report the first case to be published in Argentina of internal leishmaniasis in a child under 3. Symptoms had been noted for six months, and necropsy revealed the parasites swarming principally in the blood-producing organs. None had been found in the stools, but puncture of the spleen had cleared up the diagnosis.

Siglo Médico, Madrid

74: 545-568 (Dec. 6) 1924

Public Charities and Hospitals at Buenos Aires. J. Blanc Fortacin.—p. 545.
Alleged "New Nervous Syndrome." J. Sanchis y Banús.—p. 549.
Three Cases of Amaurotic Family Idiocy. M. Marín Amat.—p. 549.
Rickets with Anemia; Two Cases. E. Zapatero.—p. 552.
*Visceral Crises. J. Macdonald and R. Buendía.—p. 554.
The Acute Abdomen. Slocker de la Rosa.—p. 555. Cont'n.

Visceral Paroxysms from Angioneurotic Edema.—In one of the two cases described by Macdonald and Buendia, the development of urticaria immediately after each paroxysm of intense pain in the appendix region first suggested the possibility of an angioneurotic origin for the visceral crisis. In the second case the attacks simulated cholecystitis, but were followed by vomiting and patches of purpura. Both patients, aged 11 and 20, were cured by change of scene and tonics. The roentgen rays and exclusion of syphilis and tuberculosis are the main reliance in the differential diagnosis. The pains have no connection with meals, but angioneurotic phenomena may appear in skin, eyelids, throat, stomach, bowel or biliary apparatus, and the clinical picture may lead to unnecessary and futile operations.

Deutsche medizinische Wochenschrift, Berlin

50: 1635-1676 (Nov. 28) 1924

*Anatomy of Enteroptosis. A. Hasselwander.—p. 1635.
"Extrasystolia." Goldscheider.—p. 1639.
*The Sympathetic Ganglions in Angina Pectoris. P. Ormos.—p. 1640.
*Splenectomy in Polycythemia. H. Sauer.—p. 1641.
*Paratyphoid B and Breslau Gastro-Enteritis. F. Schiff.—p. 1643.
*Combined Vaccine and Chemotherapy. G. D. Belonovsky.—p. 1646.
*Infectious Tuberculosis. Kayser-Petersen.—p. 1647.
Diagnosis of Univitelline Twins. A. Orgler.—p. 1648.
Measurements of Syphilis Spirochetes. E. Hofmann.—p. 1648.
*Pyocyanin. F. Wrede.—p. 1649.
Wassermann's Tuberculosis Reaction. H. Höland.—p. 1650.
A Phenomenon in Preliminary Agglutination. D. Horváth.—p. 1650.
Poisoning with "Silicium-Fluor-Calcium" Insect Destroyer. Schmidt.—p. 1651.
*Coitus in Children. G. Bodek.—p. 1651.
The Constitution in Gynecology. W. Simon.—p. 1652. Conc'n.
Protein Therapy. A. Buzello.—p. 1654. Conc'n.
Epidemics in 1923. Prinzing.—p. 1656.
A Rejuvenation Method. Kuhne.—p. 1656.
Medical Coins and Medals. Reich.—p. 1657.
Some Medicolegal Cases. Ebermayer.—p. 1659. Conc'n.
Official Licensing of Dentists. W. Lustig.—p. 1660.
Teleplasma and Telekinesis. Schwab.—p. 1661. Reply. Sommer.—p. 1662.
Present Status of the Gallstone Question. W. Gent.—p. 1673.

Anatomy of Enteroptosis.—Hasselwander inflated the lungs in warmed human cadavers and froze them in the sitting position. The abdominal organs were extremely low. Even the kidneys had sagged. He concludes that the ligaments are no real support for the organs. Only the smooth muscle fibers in them and perhaps those in the adventitia of the arteries help to keep the organs in place. The shape of the skeleton (longer abdomen in women), the tonus of the muscles and the fat play a more important rôle. All these factors depend on the constitution of the individual.

The Sympathetic Ganglions in Angina Pectoris.—Ormos found pigmentation and degeneration of cells in the cervical ganglions of three fatal cases of angina pectoris. The coronary arteries were intact in one of them, and only slightly sclerotic in another.

Splenectomy in Polycythemia.—Sauer's patient was a woman, 42 years old, with splenomegaly. She had 6,500,000 erythrocytes per c.mm. and 90 per cent. hemoglobin. The red cells increased rapidly after splenectomy, reaching 12,000,000 within three weeks. The blood was so thick that the radial artery had to be opened. The woman died from thrombosis of the portal vein. The causal connection between the splenectomy and the rapidly progressive course of the undiagnosed polycythemia is evident.

Paratyphoid B and Breslau Gastro-Enteritis.—Schiff believes—contrary to Fränkel and Much—in differences between paratyphoid B and the Breslau gastro-enteritis strains.

Combined Vaccine and Chemotherapy.—Belonovsky implanted collodion sacs containing various germs in the peritoneal cavity of animals. When he injected later an emulsion of the same strain, he found the bacilli near the original focus. The injected dose must not be too large, nor the strain too virulent. A strong iron reaction appeared in the peritoneal exudate after injections of homologous germs treated with iron-alum. The erythrocytes from guinea-pigs which had been injected with the antiguinea-pig hemolysins adsorbed the hemolysins in vitro with twenty times the avidity of cells taken from the controls.

Infectious Tuberculosis.—Kayser-Petersen recalls three cases in which tuberculous persons undoubtedly infected others although tubercle bacilli were found in their sputum only once—in one case after the death of the infected baby—in spite of repeated examinations.

Pyocyanin.—Wrede has determined the formula of pyocyanin, the blue pigment produced by pyocyaneus bacilli. It is $C_{28}H_{28}N_4O_4$.

Coitus in Children.—Bodek examined a boy, aged 14, who was normal except for a tendency to lying and running away to his uncle. Five years previously he had attempted coitus with his mother after having observed a coitus between the uncle and aunt. Another, otherwise absolutely normal boy, 2½ years old, attempts to undress and kiss women and tried to make movements of coitus, on the back of a woman, with marked excitement and the penis in erection.

Deutsche Zeitschrift für Chirurgie, Leipzig

188: 1-164 (Nov.) 1924

Parietal Inspiratory Valve Pneumothorax. Meyer et al.—p. 13.
Experimental and Histologic Study of the Testicles. H. R. Schinz and B. Slotopolsky.—p. 76.
Drainage of Total Pleural Empyema. Nather and Ochsner.—p. 101.
Abscess on Left Side with Appendicitis. Nather and Ochsner.—p. 114.
Abscess in Douglas' Pouch Secondary to Peritonitis. Nather and Ochsner.—p. 124.
Supernumerary Bone in Heel. E. Friedl.—p. 150.
Tetanus from Leg Ulcer. P. Schmuziger.—p. 161.

188: 165-312 (Nov.) 1924

Tubal Pregnancy. K. Miller.—p. 165.
Myoma in the Pylorus. W. Goldschmidt.—p. 196.
The Intrarenal Vascular System. P. A. Kuprijanoff.—p. 206.
*Pulmonary Circulation Flooded with Mercury. Esau.—p. 221.
Fracture of Phalanges and Metacarpal Bones. H. Schum.—p. 234.
Congenital Fistulas on Lower Lip. Hilgenreiner.—p. 273.

Flooding of the Pulmonary Circulation with Mercury.—Esau describes his case, previously published, of a young woman who attempted suicide by injection into the right median vein of about 26 gm. of mercury, part of which was removed by operation, the larger part remaining inaccessible in the lungs and right side of the heart. The immediate effect of the flooding of the pulmonary circulation was slight; in time all known conditions due to mercury poisoning developed, with remarkable periods of abatement, and manifestations of tetany, but with recovery of earning capacity in a condition of chronic mercurial poisoning. In experiments on dogs and rabbits, Esau flooded the pulmonary circulation with mercury, repeating the conditions in this case. The health of animals treated with metallic mercury apparently was not affected; none died. But very small quantities of an emulsion of mercury in oil injected into the circulation anywhere caused disturbances, with death from fat embolism. The injected metallic mercury caused various changes in the lung tissues. He succeeded in filling the portal system with emulsion of mercury in oil from a mesenteric vein, but failed in all his attempts with other contrast suspensions. Roentgenograms accompany the report.

Medizinische Klinik, Berlin

20: 1673-1716 (Nov. 30) 1924

Germ Deterioration. F. Müller.—p. 1673. Cont'd.
*Diagnosis of Pleurisy. N. Ortner.—p. 1677.
*Protein Therapy in Digestive Disturbances. R. Schmidt.—p. 1678.
*The Pituitary and the Female Sex Organs. B. Aschner.—p. 1681.
*Early Operation for Gallstones. L. Kuttner.—p. 1685. Idem. L. Moszkowicz.—p. 1689.
*Protein Therapy of Rectal Ulcers. L. v. Friedrich.—p. 1692.
*Epinephrin Glycosuria. K. Schreiner.—p. 1693.
*The Kielland Forceps. C. Eisenberg.—p. 1694.
*Nutrition and Cell Functions. E. Abderhalden.—p. 1697.
Principles of Psychotherapy. H. Fendel.—p. 1700. Cont'n.
Recent Works on Cardiovascular Disease. E. Edens.—p. 1701.
Parasitology and Hygiene. H. Ziemann.—p. 1704. Conc'n.

Diagnosis of Pleurisy.—Ortner deals with the difficulties of differential diagnosis between a pleuritic effusion and a high position of the diaphragm. The latter may be unilateral and be caused by paralysis of the phrenic nerve, a tumor of the liver or spleen, a subphrenic or paranephritic abscess, or a large hydronephrosis. Dulness on percussion over the base clears up in enlargement of the liver, when the patient bends forward. Normal breathing sounds in the area of dulness and pleuritic friction sounds in its lowest parts speak against an exudate. The distance between the end of the tenth rib and the anterior superior spine is usually shortened in a subphrenic abscess on account of contracture of muscles. It is increased with a pleuritic effusion because of the expansion of the chest.

Protein Therapy in Digestive Disturbances.—Schmidt reviews the foundation and uses of protein therapy. The beneficial effect in many patients with ulcers of the stomach or duodenum is undeniable. It seems that functional affections of the digestive apparatus are also well influenced. He had good results in pylorospasm and gastric crises. Chronic colitis and cholecystitis are also amenable to protein therapy. Combination of thyroid tablets with injections of milk and a colon bacillus vaccine was successful in constitutional obesity. Mild diabetes may be treated with injections of proteins. They have rather an unfavorable action on acidosis. The asthenic type of diabetes in young persons is characterized by an absence of the thermic reaction to these injections. Insulin treatment restores the ability to react with fever. A tendency to urate deposits and cholesterolemia are indications for protein therapy. He believes that the uratic diathesis and cholesterolemia are predisposing causes for cancer and hypertension. The protein therapy may serve in prevention of this sequence.

The Pituitary and the Female Sex Organs.—Aschner reproduces photographs of young dogs after extirpation of the pituitary gland or of its anterior lobe. There was a complete arrest of the growth in length and in mental development, persistence of the juvenile fat and lanugo, and infantilism of the sex organs. Extirpation during pregnancy was followed by abortion. In adult animals, changes of the sex organs were obtained only after injuries of the diencephalon, not after extirpation of the pituitary. He believes that the importance of the soft parts in labor is underestimated, while that of the bones is overrated. In prolonged labor, the greatest time is consumed in dilatation of the cervix. A careful manual dilatation of the external os, in combination with pituitary extracts and shallow ether anesthesia, reduce the time of painful contractions.

Early Operation for Gallstones.—Kuttner discusses from the viewpoint of the internist the surgical indications in affections of the biliary passages. The uncertainty of the diagnosis is a grave objection to the so-called early operation. He has encountered patients who had undergone up to twenty-four laparotomies. They end as morphin addicts, suicides, in insane asylums, or succumb to pneumonia after another operation. The danger of operation should not be underestimated even in young persons (2.6-4 per cent. in young patients), while the affection has a lower mortality than this when treated conservatively. The operation does not insure freedom from disturbances. Painful adhesions may develop in the lightest cases. The question of disturbances due to loss of the gallbladder is still open, although the facts available do not justify accepting this as a contraindication. The personal skill of the surgeon is an important factor in the outcome. Cholecystectomy can by no means be compared with appendectomy—neither in its necessity, nor in the difficulties. He regards as absolute indications for operation a grave acute infectious cholecystitis and cholangeitis, chronic empyema of the gallbladder, occlusion of the common bile duct—always before cholemia sets in—and a perforation. As relative indications—with due regard to the frequency and severity of the attacks—he regards repeated attacks, acute inflammations, chronic cholecystitis and hydrops of the gallbladder.

Early Operation for Gallstones.—Moszkowicz means by an early operation one performed while the patient is young. He admits that the internists had good reasons for opposing it especially because of the mortality, the long painful after-treatment, postoperative hernia, and recurrences. He believes, however, that the technic is becoming less dangerous, and that duodenostomy or dilatation of Oddi's sphincter will prevent recurrences.

Protein Therapy of Rectal Ulcers.—Friedrich had good results with protein treatment in three patients with ulcers of the rectum. The focal reaction was quite pronounced.

Epinephrin Glycosuria.—Schreiner found marked glycosuria after injections of small doses of epinephrin in acute and universal affections of the skin, including extensive burns. The test was negative in chronic affections.

The Kielland Forceps.—Eisenberg considers the Kielland forceps superior to the classical type.

Nutrition and Cell Functions.—Abderhalden found with Wertheimer wide differences in reaction to insulin and epinephrin in rabbits fed with oats or green fodder. Oats with their prevalence of acid valences lower the reaction to insulin and increase the epinephrin reaction. Rats fed without carbohydrates behave in a similar way. The rabbits fed on green fodder (alkaline valences) reacted in the opposite way. He also found with Wertheimer that the animals fed with oats produce four or five times more hippuric acid from benzoic acid and glycocoll, than the green fodder animals. He agrees with the authors who believe that the apparent failure of some endocrine glands may be due to such a lack of conditions favorable for the action of hormones.

Münchener medizinische Wochenschrift, Munich

71: 1673-1706 (Nov. 28) 1924

*The Constitution and Uterine Tumors. A. Mayer.—p. 1673.
*The Thymic Constitution. H. Schridde.—p. 1674.
The Xanthoprotein Reaction with Blood Filtrates. E. Becher.—p. 1677.
*Insulin and Pancreatic Secretion. Collazo and Dobreff.—p. 1678.
Extraction of Urobilin from Feces. T. Hausmann.—p. 1678.
*Action of Magnesium. K. Hoesch.—p. 1679.
Orthopedic Aims in Amputation. P. Jottkowitz.—p. 1680.
*Infections in Northern Argentina. Mühlens et al.—p. 1683.
*Fibroids in Pregnancy. Walther.—p. 1685.
*Treatment of Furuncles. H. Hans.—p. 1686.
*History of Cisterna Puncture. M. Westenhöfer.—p. 1687.
*Choked Disk. R. Cords.—p. 1687.
*Medical Education in Russia. S. Weissenberg.—p. 1689.
Priority for "Color Index." Ratig.—p. 1706.

The Constitution and Uterine Tumors.—Mayer noted that women with cancer of the uterus had had a late menarche. Menstruation had begun in or after the seventeenth year in 48.4 per cent. of patients with cancer of the body of the uterus and in 42 per cent. with cancer of the cervix. Heredity of cancer should be better investigated.

The Thymic Constitution.—Schridde's observations are based on 97 instances of death of men from injuries. Hyperplasia of the medullar part of the thymus was observed in 56 of them (the oldest 39 years of age). Some of the men in this group died after comparatively slight injuries. No case of death from an electric current of 220 volts was recorded in the 41 men without hyperplasia of the medulla portion of the thymus. The spleen in the thymic condition is large—average 250 gm. in comparison to the normal 115. Its follicles are hyperplastic as well as some of the lymph glands. This enlargement is present without relation to the food intake. The thymic men were tall, with a short neck and an intersexual border of pubic hair. There was very little hair in the axilla and elsewhere on the body and face. The subcutaneous fat was whiter than usual. The left ventricle was dilated and hypertrophic. The thymicolymphatic state is a congenital, constitutional anomaly. Simple persistence of the thymus (in castrates) is different from this hyperplasia of the medulla of the gland. Only the latter causes thymic death.

Action of Insulin on Pancreatic Secretion.—Collazo and Dobreff found an increased external secretion of the pancreas after intravenous injections of insulin in dogs.

Action of Magnesium.—Hoesch reviews the physiologic import and the pharmacology of magnesium. He recommends subcutaneous injections of small amounts (1 gm.) in spastic constipation if other measures fail.

Malaria and Other Infections in Northern Argentina.—Mühlens, Dios, Petrocchi and Zuccarini made an expedition to the northern part of Argentina. Malaria—especially the estivo-autumnal type—is common. Microfilariasis seems to be imported from Bolivia. They also report the first two findings of *Schizotrypanoma cruzi* in man in Argentina.

Fibroids in Pregnancy.—Walther reports on two successful enucleations of uterine fibroids in pregnant women. Reposition of the retroflexed uterus is usually sufficient, with signs of incarceration. He is strictly opposed to induced abortion in treatment of fibroids, on account of its dangers. The fibroid is a harmless complication, as a rule.

Treatment of Furuncles.—Hans warns against maltreatment of furuncles with suction apparatus.

History of Cisterna Puncture.—Westenhöfer claims to be the author of suboccipital incision for therapeutic purposes. The operation was performed under his directions by Hartmann, in 1905, in four patients with epidemic meningitis. He draws attention to the puncture of the lower cornu of the cerebral ventricles in hydrocephalus, also suggested by him and applied successfully by Mühsam, in 1906.

Choked Disk.—Cords emphasizes the normal central and peripheral vision with choked disk. This is the reason why ophthalmoscopic examination often comes too late, after atrophy has developed.

Medical Education in Russia.—Weissenberg describes the medical education in soviet Russia. New schools have been founded, and the physicians who cared for the title of professor are teaching. The old privileges in admission have been replaced by new ones. The output of physicians is so great (about 5,000 per year), that many of the schools are to be closed. At present there is already one physician to 3,500 of population, which, he says, is too much for Russia. In spite of this, the peasants are without medical aid.

Wiener Archiv für innere Medizin, Vienna

9: 1-186 (Oct. 15) 1924

*The Blood in Encephalitis. W. Berger and R. Untersteiner.—p. 1.
*Essential Hypertension and the Kidneys. F. Kisch.—p. 31.
*Indistinct Border of Sedimentation. H. Engel.—p. 45.
*Tachycardia. H. Lenhartz and B. Samet.—p. 71.
*Roasted Products in Diabetes. P. Mahler and K. Pasterny.—p. 83.
*Urea Treatment in Nephrosis. V. Kollert and O. Susani.—p. 105.
*Blood Clotting with Calcium. W. Loewenstein.—p. 115.
*Diaphragm Function Test. K. Hitzenberger.—p. 125.
*Percussion of Apexes in Active Tuberculosis. G. Felsenreich.—p. 129.

Morphology of the Blood in Encephalitis.—Berger and Untersteiner found an absolute and a relative increase in the neutrophils as a sign of exacerbation of encephalitis. The eosinophilia present in some of the patients differentiates the disease from affections which are due to cocci. The globulins were relatively increased in the chronic stage, the viscosity of the serum higher, although less high than expected from the globulin concentration.

Essential Hypertension and the Kidneys.—Kisch applied various kidney function tests to patients with essential hypertension. He found an impairment in kidney function before the originally labile or paroxysmal high pressure became stabilized at a high level. Almost all the patients with permanent hypertension had—although occasionally only slight—signs of impaired renal function. He believes that an affection of the arterioles of the kidney is the cause of essential hypertension.

Indistinct Border of Sedimentation.—Engel investigated the cause of the indistinct upper limit of the sediment formed of erythrocytes. It occurs in anemia with a hemoglobin percentage below 40 per cent. Anisocytosis is only a frequent coincidence, not the cause of the phenomenon. He believes that currents and shifting of the larger agglutinates of erythrocytes—made possible by the greater dilution of the blood—account for it.

Tachycardia.—Lenhartz and Samet report on a case of auriculoventricular and another of auricular tachycardia with marked—although transient—beneficial effect of deep breathing or vagus pressure. A patient with auricular tachycardia of long duration recovered after treatment with digitalis and eserin.

Toasted Products in Diabetes.—Mahler and Pasterny confirm the advantages of toasted products of rice, flour and potatoes and of caramel in the dietetic treatment of diabetes. They are antiketogenic, but cause less glycemia and glycosuria. These products as well as inulin and vegetables containing inulin are recommended in combination with much fat and little insulin.

Urea Treatment in Nephrosis.—Kollert and Susani confirm the dehydrating action of thyroid preparations and of large doses of urea (over 30 gm.) in nephritis with dropsy. Urea is contraindicated in retention of nitrogen. A lowered excretion of albumin was observed occasionally under this treatment. The changes of the protein quotient of the plasma are more pronounced during edema than afterwards.

Blood Clotting After Addition of Calcium.—Loewenstein added various salts of calcium, strontium and barium to human blood. All of them prevented coagulation. The sedimentation of cells after these additions was slower than in citrated blood.

Diaphragm Function Test.—Hitzenberger modifies Müller's experiment by substituting a snuffling movement for the slow inspiration. The patient is observed under roentgen control. After a deep expiration, his mouth and nose are closed, and he is told to make a short effort to snuffle. A normal diaphragm moves downward; if its muscle or nerve is weaker, the affected side goes up.

Percussion of Apexes in Active Tuberculosis.—Felsenreich gives in detail the technic and results of his method of percussion of the apexes. He recommends especially the examination of the supraclavicular spaces and of the clavicle.

Wiener klinische Wochenschrift, Vienna

37: 1229-1250 (Nov. 27) 1924

*Nervous Indigestion. H. Schur.—p. 1229.
Stability of Serum Colloids. L. Petschacher.—p. 1234.
Primary Sarcoma of the Spleen. A. Birman.—p. 1237.
*Movements of Lung Border with Respiration. E. Czyhlarz.—p. 1238.
*Uterovaginal Tamponade. H. Katz.—p. 1239.
*Injury of Bowel from Compression of Aorta. F. Weigl.—p. 1241.
*Antiperistalsis. M. Oppenheim.—p. 1242.
Coué. H. Kogerer.—p. 1243.
Treatment of Eczema. G. Nobl. Supplement, pp. 1-16.

Nervous Indigestion.—Schur reviews the nervous and endocrine regulation of the intestines. The predominance of the tonus of the parasympathetic in Addison's disease manifests itself in diarrhea and vomiting. Diarrhea in exophthalmic goiter and the therapeutic effect of thyroid extracts in certain constipated patients indicate the influence of the thyroid. Mucous colitis occurs usually in women, and the ovaries in the majority of them are more or less pathologic. Dyspepsia and abnormal pains in young girls seem to be of the same origin. Vomiting may be so dominant in migraine that laparotomies have been done in such patients, as well as in the former group. The possible diagnostic significance of hunger and the feeling of satiety is underestimated. He agrees with Müller in localizing these sensations in the diencephalon. Yet he believes that the stimuli come from the organs where the assimilated food is deposited—especially the liver. It is possible that the fat tissue in these persons is unable to increase the deposits, and therefore causes a lack of the appetite for food. It may be that thin people eat so little because they are thin. Dyspepsia of purely psychic origin is frequent. Sometimes it is a sign of beginning mental disease.

Movements of Lung Border with Respiration.—Czyhlarz observed a double step in the increase in the clearness of the sound of the lower margin of the lung in the inspirium. In an absolutely normal lung, the sound becomes full at once.

Uterovaginal Tamponade.—Katz investigated the dangers and results on the 254 women (among 52,000) in whom Dührssen's tamponade of the uterus and vagina had been applied at the First Gynecologic Clinic at Vienna. He points out that other complications increase its morbidity, which was almost 27 per cent. In spontaneous deliveries it was 7.4 per cent., without a death. The total mortality was low. Less than 2 per cent. died from infection. They remove the tampon after not more than twelve hours. The method helps sometimes almost miraculously. Where it fails, only vaginal extirpation of the uterus has a chance, not abdominal hysterectomy, which produces too much shock.

Injury of Intestine from Compression of Aorta.—Weigl reports on a case of perforation of the bowel by Esmarch's compression of the abdominal aorta. He recommends consideration of the possibility of this whenever peritoneal symptoms appear in patients who had been operated on with compression of the aorta.

Antiperistalsis.—Oppenheim recalls the experimental investigations he made with Löw on antiperistaltic movements of the vas deferens. They may be induced by injuries of the sex organs or by irritation of the colliculus. They represent the mechanism of gonorrheic and so-called erotic epididymitis. Atropin in prevention of epididymitis is rational.

Zentralblatt für Chirurgie, Leipzig

51: 2567-2630 (Nov. 22) 1924

Subtrochanter Osteotomy in Infantile Paralysis. Simon.—p. 2568.
Peripyloric Membranes. E. Makai.—p. 2570.
Surgical Importance of Adenofibrosis and Adenomyosis of Female Genitals. E. Stübler.—p. 2573.
Intravenous Drip Infusion. E. Eick.—p. 2575.
The Blood Platelets with Goiter. B. N. Rosenbaum.—p. 2580.
Own Blood Infiltration in Treatment of Furuncles and Carbuncles. A. Schlesinger.—p. 2583.
Operative Treatment of Pleural Empyema Without Aspiration. H. Kögel.—p. 2584.
Case of Calcified Adhesive Pericarditis, with Cardiolysis and Recovery. H. Lossen and H. Kahl.—p. 2585.
Stain as Guide in Operation for Fistula. E. Baumann.—p. 2587.

51: 2679-2742 (Dec. 6) 1924

Postoperative Dilatation of Stomach After Billroth I. Melchior.—p. 2681.
*Prevention of Thrombosis. Budde and Kürten.—p. 2684.
*Treatment of Furuncles and Carbuncles. F. Berndt.—p. 2686.
*Narcosis and Acidosis. F. Schulze.—p. 2688.
Operative Treatment of Gallstones in Common Bile Duct with Primary Suture. E. v. Elischer.—p. 2690.
Incarceration of Small Intestine in Slit in Mesosigmoid. S. Kljutscharew.—p. 2692.
*Correction of Curvatures by Rabl Method. J. Elsner.—p. 2694.
Three-Way Syringe. H. Nieden.—p. 2695.

Protection Against Thrombosis After Operations on Vessels.—Following London's observation that a preliminary laparotomy assured successful angiostomy in dogs, Budde and Kürten experimented on rabbits. They suggest that the prophylactic effect of the first laparotomy might be due to an antigen formed, which prevents thrombosis, at least excessive thrombosis. In half the animals the spleen was drawn out and a splenic or mesenteric vein ligated; ten or twelve days later, through a median laparotomy, a thread was drawn through the portal vein and fastened to the abdominal wall, slightly kinking the portal vein. Most of the animals stood the operation well, and examination after a few days revealed only small, often scarcely perceptible thrombi at the point where the thread had been passed. In the second group of animals, in which no preliminary operation had been performed, practically all died, necropsy showing thrombosis in the portal vein, in varying extent, from total involvement of all the root region to a local thrombus. They point to the possible practical significance of these findings for surgery. Experiments are in progress to determine the duration of the protection and the possibility of the substitution of roentgen irradiations or parenteral injections of protein for the preliminary laparotomy.

Treatment of Furuncles and Carbuncles.—For furuncles on the face, Berndt recommends roentgen irradiations according to Heidenhain, reporting four successful cases. For carbuncles of the neck and back, he finds thorough extirpation safe and effective. He makes a transverse incision, across the carbuncle, then five vertical incisions, all beginning and ending in healthy tissue. The flaps of skin are turned back, and the entire area of infection is excised.

Narcosis and Acidosis.—Schulze's investigation in about 150 cases revealed acetonuria in 67 per cent. of all patients operated on under general anesthesia; in 40 per cent. after intraspinal anesthesia, and in 85 per cent. after local. He says it cannot, therefore, be due only to the narcosis. He rejects the idea of a close relation between diabetic and postoperative acidosis, at least as to the possibility of transition into true diabetic coma; the summation of both forms must be guarded against. Acidosis following operations depends on age, sex and a constitutional predisposition, as also in acidosis in children. Apparently, postoperative acidosis represents a reaction to the operative shock. Intraspinal anesthesia is indicated, where possible, for patients with diabetes.

Correction of Curvature After Softening the Bones.—Elsner has applied the Rabl method successfully in thirteen children with rickets, all under the age of 3; it failed with two boys, aged 4 and 7. He gave daily 0.2 gm. ammonium chlorid per kilogram of body weight in a 10 per cent. solution. The bones become soft enough to mold them into normal shape in, at most, twelve days. The advantages over the Anzoletti and Roepke plaster softening method, in the greater ease of

correction and shorter time of treatment, far outweigh the added care required in the Rabl method through having to keep the children in bed. In the final days of the treatment, the children lost appetite and were inclined to cry easily; eczema developed in some. With a broad rubber band instead of the Esmarch bandage the children bore the passive congestion better. Elsner believes it unnecessary to darken the room, as recommended by Rabl. When calcium, ultraviolet irradiations, and food rich in vitamins were given on suspension of the medication, the children soon regained their normal appearance. (The Rabl technic was described in these columns, March 22 and May 31, 1924, pages 1009 and 1827).

Zentralblatt für innere Medizin, Leipzig

45: 937-968 (Nov. 15) 1924

*Cardiac Asthma. E. Becher.—p. 937.
*Hypertension from Clinical Standpoint. L. Hahn.—p. 946.

Cardiac Asthma.—Becher's paper is a critical abstract from Eppinger, Papp and Schwarz' monograph on cardiac asthma. He finds that they have established the fact of an increased blood stream from the periphery to the heart. The weakness of the left ventricle is not the only pathogenic element.

Hypertension from Clinical Standpoint.—Hahn determined the systolic blood pressure in 368 individuals between the ages of 10 and 70. The average blood pressure begins to rise earlier in women than in men. In older subjects, the increase of the instability of the pressure is characteristic of men; the higher level of women.

45: 969-984 (Nov. 22) 1924

*Hydrocyanic Acid Poisoning. G. V. Bein.—p. 970.

Atrophy of the Liver After Inhalation of Hydrocyanic Acid.—Bein reports the history of a man who died from acute yellow atrophy of the liver. The disease had followed immediately after a poisoning with the fumes of hydrocyanic acid.

Nederlandsch Maandschrift v. Geneeskunde, Leyden

12: 565-614, 1924

*Dextrocardia. E. Gorter.—p. 565.
*Idem. W. Einthoven.—p. 571.
Experiences with the Butter-Flour Mixture in Infant Feeding. C. H. J. van Lohuizen.—p. 575.
*Intercurrent Infection in Leukemia. J. B. Stalling-Schwab.—p. 607.

Dextrocardia.—Gorter gives the electrocardiograms and roentgenograms of five young children with dextrocardia. One infant had total situs inversus of all the viscera. The peaks in the electrocardiograms in some extended downward. Einthoven discusses the electrocardiogram in these cases, analyzing it with the aid of two or more galvanometers, and comparing it with the findings in a normally located heart.

The Influence of an Intercurrent Infection on Lymphatic Leukemia.—Stalling-Schwab's patient was a girl, aged 3, with a large mediastinal tumor and other signs of lymphatic leukemia. It proved refractory to roentgen-ray exposures, but during an intercurrent bronchopneumonia, the leukocyte count dropped in four days from 70,000 to 6,000, with 85 per cent. lymphocytes. The bone marrow had evidently been stimulated to extra exertion and the lymphocytes soon dropped to 11.5 per cent. The sicker the child grew, the more normal its aspect became, as the glands returned to more or less normal size. The urine gave a strong urobilin reaction, and high uric acid content. The child seemed moribund, but gradually recovered after several weeks of fever. The symptoms of the lymphatic leukemia gradually returned after recovery from the infection. In two months the leukocytes numbered 34,000, with 93.5 per cent. lymphocytes. It was suggested that the unmistakable benefit from the intercurrent infection might perhaps be repeated by inducing some other infection, but the general verdict was against this venture. The most that was advocated was to vaccinate the child—which had never been done. She was vaccinated, but the disease continued a progressive course and proved fatal in a few months.

12: 615-672, 1924

*Pathogenesis of Asthma. L. Hertzberger.—p. 615.
*"Exudative Paroxysms." G. C. Bolten.—p. 637. Conc'n.

Pathogenesis of Asthma.—Hertzberger declares that none of the current theories explains asthma while some actually contradict the facts observed. He recalls that it is the only affection accompanied by dyspnea in which there are paroxysms and free intervals. It can only be a neurosis—a lack of the normal brake on the stimulus for inspiration when the lungs have become distended, a neurosis inducing perverse function. This assumption of a disturbance in the self-regulation of respiration explains the distress, the disturbance in inspiration, the distended lungs, the tendency to development of chronic bronchitis and emphysema, and the connection between the factors bringing on the attack and the paroxysm. The thick sputum clings to the walls of the air passages and stretches as these become distended. When these sputum fibers are released from the walls, they curl up, forming Curschmann's spirals.

Pathogenesis and Treatment of Epilepsy, Migraine, Etc., as Manifestations of the Exudative Diathesis.—Bolten marshals a long array of evidence to sustain his contention that genuine epilepsy, genuine migraine, mucomembranous colitis, and certain cases of dysmenorrhea, etc., are merely attacks of transient edema. The edema is the consequence of the local accumulation of toxic substances—the localization is determined by a constitutional predisposition of the organs. The toxic substances involved are products of normal metabolism which, however, is not carried far enough in time. The metabolism proceeds sluggishly, owing to a disturbance in the numerous fermentative processes of the intermediate metabolism from insufficiency of the thyroid or chromaffine system or both, under the influence of a congenitally substandard sympathetic system. The accumulation of endogenous toxic products leads finally to an effort to throw them off, a paroxysmal discharge, in the form of an exudative process, edema. When this occurs in the brain, we have the epileptic seizure; in the bowel, mucomembranous colitis; in the skin, urticaria. This assumption explains the combination of epileptic seizure and tetany after too extensive operations on the thyroid-parathyroids. It explains further the alternance of such manifestations in different members of families, and, above all, it explains the benefit from treatment with thyroid extract or extracts of other accelerating endocrine glands in all these angioneurotic manifestations. He reports a number of cases of genuine epilepsy notably improved by thyroid treatment; the seizures sometimes returned when the thyroid extract was suspended and were banished anew on resumption. The fluid from the edema, wheals, stools in the colitis, and the vomit that terminates an attack of genuine migraine contains masses of eosinophils, testifying to the intense biologic reaction to the toxic catabolytes. His theory directly controverts Widal's interpretation of the hemoclastic crisis. With pronounced liver disease, there is no exaggeration of the hemoclastic crisis to correspond to the damage of the liver.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 2187-2326 (Nov. 1) 1924

Congenital Hernia of Lung in Neck. M. de Bruin, Jr.—p. 2188.
*Pathology of the Cauda Equina. W. G. S. Smitt.—p. 2199.
*Diagnosis of Incipient Blood Disease. Brinkman and van Dam.—p. 2208.
Iodized Oil in Examination of Spinal Cord and Meninges. W. G. S. Smitt and S. T. Bok.—p. 2213.
Diagnostic Importance of Iodized Oil. F. S. van B. Bastiaanse and C. J. H. T. Plat.—p. 2227.
Abuses in Amsterdam Hospitals in Former Centuries. Hellinga.—p. 2230.
Thomas Sydenham. A. J. van der Weyde.—p. 2240.

Disease of the Cauda Equina.—In one of Smitt's three cases, agonizing pain at times in the lumbar and intragluteal regions and rear of the thigh was the only symptom. In the second case there was similar pain, fluctuating in intensity, and the knee-jerk and Achilles reflex were weaker on the left side, while the anal reflex was nearly abolished. The third and fourth vertebrae were tender. There was a suggestion of Kernig's sign on the left side. The third patient presented in addition sensory disturbances and occasional incontinence or retention of urine. There were no motor disturbances. Injection of iodized oil cleared up the diagnosis, even after ordinary roentgen-ray examination had

been negative. On account of the pains, none of the patients were able to extend the legs in bed, and one had slept for months in a chair, his legs drawn up.

Early Pathologic Changes in the Blood Corpuscles.—Brinkman and van Dam remark that the usual measures for examining the blood cells expose them to such injurious influences that slight pathologic changes escape detection. They urge examination of the cells in their own plasma. They draw 1 or 2 c.c. of blood into one fourth the volume of 3 per cent. sodium citrate solution, centrifugate gently or set aside to settle. After sedimentation, they aspirate some of the plasma and add to it some of the sedimented corpuscles to form a 10 or 20 per cent. suspension. A drop of this is examined on a paraffin-coated cover glass.

2: 2327-2422 (Nov. 8) 1924

*Critical Stage in Development of Hip Joint. Harrenstein.—p. 2328.
Cell Stimulation in Therapeutics. H. Verploegh.—p. 2351.
*Means to Destroy Oxydase Granules in Leukocytes. Vedder.—p. 2357.
Indications for and Results of Episiotomy. Van Tongeren.—p. 2365.
Cancer in Women in Batavia. N. A. J. F. Boerma.—p. 2373.
Is Camphor a Stimulant for the Heart? Van der Togt.—p. 2376.

Prevention of Congenital Dislocation of Hip Joint.—Harrenstein has been making a special study of conditions in the hip in ninety-five cadavers, fetuses, children and adults, with special reference to the shape of the acetabulum. He found that the conditions in the fetal hip joint as term approaches invite dislocation on account of the compression from the cramped space, forcing the head of the femur out of its normal position. When the child is born, the most scrupulous care is necessary to refrain from straightening the legs until this precarious position of the head of the femur has corrected itself spontaneously. Any forcible straightening at this critical period stretches the anterior wall of the capsule and the ligament, and the clinical picture of complete dislocation of the hip joint results. In some of the fetal pelves examined, the dislocation had evidently occurred in early fetal life, and was traceable to some malformation; these are probably the cases which recur after reduction.

Influence of Ultraviolet Rays and Heat on Oxydases in Leukocytes.—Vedder theorizes to explain why old specimens of blood fail to give the usual oxydase reactions on certain days, as also after exposure to heat, ultraviolet rays or sunlight.

Acta Medica Scandinavica, Stockholm

61: 107-293 (Nov. 26) 1924

*Nephritis Caused by Tuberculosis. C. Holten.—p. 107.
*Interpretation of Changes in Electrocardiogram. Deist.—p. 143.
*Relation of Blood Sugar to Starch in the Normal. Kjer.—p. 159.
*Chronic Hampering of Circulation in Portal Vein. Brahme.—p. 175.
*Fermentation Dyspepsia. N. Svartz.—p. 194.
Myxedema with Cerebellar Symptoms. R. Lundberg.—p. 240.
Capillaries in Vasomotor Disturbances. Hisinger-Jägerskiöld.—p. 251.
Myelitis as Complication of Measles. Bergenfeldt.—p. 281.

Nephritis Caused by Tuberculosis.—Holten's article is in English. It was summarized, Dec. 27, 1924, p. 2122, when published in Danish.

Significance of Lengthening of PR Phase in the Electrocardiogram.—Deist discusses the simple retarding of the transmission without disturbance of rhythm, or even partial heart block. His electrocardiograms from 104 persons revealed in 12 cases of valvular defects without arrhythmia or dilatation of the heart that the PR was of normal length (up to 0.15) in 5, and retarded in 7 (up to 0.21). In 23 cases of severe defect, with enlargement of the heart, all but one showed marked retarding of the transmission time (PR up to 0.225). The lengthening of the PR indicates the participation of the myocardium in the His bundle region in some known or unsuspected previous pathologic condition in the heart. It thus warns of impending danger before any other sign of it has developed, and may prove the precursor of absolute arrhythmia or even of sudden death.

Influence of Farinaceous Food on Sugar Content of the Blood.—Kjer tested the blood for sugar every five minutes after intake of starch. The tests were made on four healthy young persons and they demonstrated a marked rise in the blood sugar. The rise occurs practically the same with both small and large quantities of the farinaceous food. Karen Marie Hansen has reported the same with intake of small and large quantities of glucose. The increase in the blood sugar is as high with the starch as with glucose. Comparative tests with 27.5 gm. of starch and 27.5 gm. of glucose showed a maximal rise from 0.102. to 0.130 in forty minutes with the starch (oatmeal), and from 0.103 to 0.128 in fifty minutes with the glucose. With 100 gm. of starch (in potatoes) the rise was from 0.098 to 0.184 in twenty-five minutes, and with 100 gm. of glucose, from 0.096 to 0.182 in thirty-five minutes. The duration of the rise was ninety-five minutes with the starch in this case, and two hours with the glucose. The article is in English.

Chronic Partial Obstruction of Portal Circulation.—Brahme reports a case of what seemed to be thrombosis of the portal vein, but necropsy at the age of 51 disclosed compression of the portal vein by adhesions. The spleen was exceptionally large, and the erythrocytes numbered only 1,450,000. The first symptoms of portal obstruction had been noted in early childhood.

"Fermentation Dyspepsia."—Svartz devotes thirty-six pages to tabulation of the data from forty-two men and forty-two women presenting the typical clinical picture of fermentation dyspepsia. Abnormally intense fermentation of the carbohydrates entails irritation of the intestinal mucosa as was demonstrated by endoscopic examination. Palpation usually revealed likewise some tender and contracted loop of bowel above. The term "fermentation dyspepsia" should be discarded for enteritis from excessive fermentation of carbohydrates.

Supplement 8: 1-260 (Nov. 26) 1924

*Blood Sugar Studies. R. Hatlehol.—pp. 1-260.

Threshold for Sugar in Diabetes and Renal Glycosuria.—Hatlehol's research on thirty-eight diabetics showed that the threshold for glycosuria was constant in the same individual, regardless of the degree of metabolic derangement, or the trend was downward. A rise of the threshold was exceptional. The differences in the threshold between different individuals cannot be due to differences in kidney function, demonstrable by available function tests. In seventeen cases of benign chronic glycosuria, a progressive tendency was not apparent in any instance. Cases of both diabetes and of renal glycosuria were observed in five of the twelve families. One family had cases of cyclic glycosuria of the renal type, a transition case, and a case of genuine diabetes. During fasting, the blood sugar curve declined during the day but rose in the course of the night in twenty-four diabetic patients. This paradoxic rise must be regarded as an unfavorable sign. He warns that this passing of the threshold in the night, causing reappearance of glycosuria, must be taken into consideration in estimating the effect of meals or other external factors on the blood sugar. The monograph is in English, with eighteen graphs and 129 tables of minute details.

Hygiea

86: 721-752 (Oct. 31) 1924

Negative Wassermann Reaction in Infants with Florid Syphilis. G. Ahman.—p. 725.
*Micromethod for Blood Sugar. G. Höglund.—p. 732.
Tuberculosis in Diabetics. E. Lundberg.—p. 737.

Micromethod for Colorimeter Determination of Blood Sugar.—Höglund's method differs from the Folin-Wu technic in that 0.2 c.c. of blood suffices, which is diluted twenty times. The two methods give equally exact results, he says.

86: 801-848 (Nov. 30) 1924

*Angioneurotic Edema of the Glottis. F. Källmark.—p. 801.
Four Operative Kidney Cases. G. Söderlund.—p. 805.
Balantidium Colitis Treated with Emetin. F. Nord.—p. 826.

Angioneurotic Edema of the Glottis.—Källmark reports a case in a man, aged 55, with edema of the entire throat, and history of recurring transient edema since his twentieth year; the father's death was probably due to edema. Intubation had to be followed by tracheotomy. During the next two years two similar attacks occurred, with tracheotomy performed once more. The case illustrates the grave prognosis of the disease, the impotency of internal treatment, and the need of surveillance during the attacks.